Europeana Learning Scenario

Title: Why are Fossils Important?

Author

Sonja Jankulovska

Summary

This activity uses the fossil collections available on Europeana. Fossils are formed when the remains of the organism are stored in sediment at the bottom of the water column; the sludge may eventually form a sedimentary rock. If later that sedimentary rock is exposed to the surface of the earth, the fossils can be removed from it. Very few of the organisms that once lived became fossils. Most organisms, after they die, swallow quickly and disintegrate.

Searching for fossils is like traveling back in time to look at the Earth's past. You do not have to be a professional paleontologist to collect remnants of ancient life. Anyone can find fossils. Fossils give us a beautiful window into our past.

All you need is basic information, a good location and a lot of patience.

Table of summary

Subject	Science, Paleontology, Geology, Archaeology
Topic	What can we learn from fossils?
Age of students	11 -12
Preparation time	1 hour
Teaching time	4 hours (activities are implemented on 4 hours in duration from 60 min)

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Online teaching material	Fossil research, fossilization, trace fossils, paleontologists with uses https://www.nationalgeographic.org/encyclopedia/fossil / Evolution - a story of life on our planet and without a doubt the most important topic within the subject of biology. Here you learn about the "fact of evolution", ie the development of species in the last 3.5 billion years, ie an overview of the evolution process, "Everything that mutates - mechanisms of evolution" and "Cultural evolution - changes in the human world" shows that evolutionary processes occur not only in nature but also in human culture. Booklet about Evolution Video
Offline teaching material	Photos, worksheets, texts from books.
Europea na resource s used	**Fossil 1** **Fossil 2** Fossil 3

Licenses

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Integration into the curriculum

Connection of biology activities to other subjects such as chemistry, physics and geography.
Visiting other subject teachers.
Using Microsoft Education to research fossils.
Using the Scientix resource to learn about fossils and evolution.

Live meeting through Skype with other teachers to make models of fossils.
Visit to the Natural Science Museum in Skopje (lecture by paleontologist).

Aim of the lesson

What can we learn from fossils?

1. Consider how living organisms change over millions of years (evolution).
2. Examining fossils and studying their characteristics.
3. What can we learn from fossils?
4. How fossils are formed.
5. Explain how the fossils are 'a window to the past'.

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Trends

- Collaborative learning: a strong focus on group work.
- Peer learning: students learn from peers and give each other feedback.
- Project-based learning: students receive fact-based tasks, problems to be solved, and they work in groups. This type of learning usually goes beyond traditional courses.
- Visual search and learning: images and multimedia are stronger than verbal stimuli.
- Lifelong learning: learning does not stop at school.

21st century skills

Skills: Critical Thinking, Communication, Collaboration and Creativity will be covered through suggested activities, collaborative work, and peer presentation.

ICT literacy: promoted using networked resource platforms, online presentation and / or online tools, and ongoing peer interaction.

Communication: Students have to communicate with the members of their groups and to present their work to the others.

Activities

Name of activity	Procedure	Time
WORKSHOP #1 What Are Fossils?	Students first need to understand what fossils are, the differences between fossils and other natural objects, and that not all plants and animals will become fossilized. How does a living creature become a fossil? These exercises explore the mysterious processes that keep evidence of past life. Through thinking, children will be able to explain much of the mystery surrounding fossils and fossilization. This introductory activity introduces the concept that fossils are the remains or traces of ancient living creatures. They will also begin to think about how rare fossilization is. In these mysterious processes, students will come with the help of biology teachers - how they are created-creating fossils, geography sedimentary rocks, physics and chemistry - fossil fuels. They will also be helped by the book Evolution that is used by Scientix resources	40'

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WORKSHOP #2 Investigate animal fossils	The investigations of this standard have many hands-on activities. They will help students know what the different fossils are and help them understand how nature makes these fossils. They will show students where fossils are found and how they are discovered. The investigations will show how fossils provide clues to Earth's history and how they provide evidence to make inferences about past environments. Some activities also compare fossils to living organisms of today to see if the organisms still exist or are extinct. National geographic	
Animated video	Video Make a list of scientific vocabulary that we heard in the videos e.g. sediment Main: Children to draw flow diagrams to show:	40 '
how to create a fossil	• How an animal becomes fossilised in the ground This practical involves students making fossils from shells or plants using plaster. Explain to the class that they are now going to have a go at creating their own fossils within some rock. Later they will then have to carefully excavate the fossil like real palaeontologists. Demonstrate how to make a fossil by modelling the process to them and using this video . ***Your challenge is to making fossils*** A selection of plant matter and/or shells will be required. Shells with rough edges or which have distinguished shapes work better than flat shapeless objects. Thick sturdy leaves or pine cones work well if fossils of plants are to be created. Small toy dinosaurs can be used for fun. Equipment required (per set): Plaster Disposable tub Stirrer Newspaper Gloves Selection of objects to be fossilised The plaster needs to be mixed to a smooth but fairly thick consistency in the disposable tub. The object then can be pressed into the surface of some plastelin to form a cast. The plaster can then be poured into the cast and left to dry. Once the plaster had hardened, the object can be removed from the plastelin .	

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The plaster represents sediments that cover bodies and objects, building into a solid layer after many years. In nature, the object usually decomposes over time leaving an imprint of the surface in the sedimentary rock.

Once the plaster has dried, acrylic paints may be used to paint the fossil. Water based paints will soak into the plaster and will not give a good finish.

THE VISITING OF NATURAL SCIENTIFIC MUSEUM IN SKOPJE

Assessment

Students are asked to summarize the information they have obtained as a result of their research. Finally, in-class evaluation is carried out with Quizziz.

********** **AFTER IMPLEMENTATION** **********

Student feedback

Part of the work to my students - made fossils presents through pictures

Teacher's remarks

Remarks

About the Europeana DSI-4 project

Europeana is Europe's digital platform for cultural heritage, providing free online access to over 53 million digitised items drawn from Europe's museums, archives, libraries and galleries. The Europeana DSI-4 project continues the work of the previous three Europeana Digital Service Infrastructures (DSIs). It is the fourth iteration with a proven record of accomplishment in creating access, interoperability, visibility and use of European cultural heritage in the five target markets outlined: European Citizens, Education, Research, Creative Industries and Cultural Heritage Institutions.

European Schoolnet (EUN) is the network of 34 European Ministries of Education, based in Brussels. As a not-for-profit organisation, EUN aims to bring innovation in teaching and learning to its key stakeholders: Ministries of Education, schools, teachers, researchers, and industry partners. European Schoolnet's task in the Europeana DSI-4 project is to continue and expand the Europeana Education Community.

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