

Woolly mammoths , fossils, and glaciers. Our ancestors evolving to spread across the planet. Step into a learning time machine as we explore Ice Age Life!!

We'll spend time exploring the wonders of the last ice age, ending only about 11,700 years ago. Our voyage will take us across the climate and geography of our past and connect to current arctic tundra biome in comparison. Glaciation, massive mammals, and human ingenuity and expression at our fingertips.

In our eko-STEAM Ice Age Life, we'll spend time learning about the way our world was as our ancestors spread out to become one of the most successful species in the history of the planet. We will dive into traits possessed by our prehistoric cousins, the woolly rhinoceros, the woolly mammoth, and the glyptodon. We'll understand how predators of the age survived using fascinating adaptations such as massive canine teeth. Our cousins, the Neanderthals, meet us along the way as we examine primitive hominin adaptations such as intellect and communication and we'll begin to contemplate how our species survived in such harsh ice age climates through harnessing fire and building shelters. We will finish with an exploration of ancient art when we paint our own "cave" painting about one of our favorite animals!

This is a virtual version of Lesson 2 of our full, nature-based eko-STEAM Building Bridges Middle Childhood curriculum currently in development. This virtual lesson connects to our Lesson 3- Ice Age Villages, which focuses on making a model of an ice age, human settlement.

eko-STEAM Ice Age Life delves deeply into Next Generation Science Standards through an exploration of our natural world, the fauna that inhabits it, and the interactions between life and earth. We'll take a journey across climate and habitat and discuss our own traits and behaviors that help us survive.

This exciting journey will have the students use a variety of tools to explore:

- FREE Downloadable Project Imo eko-STEAM: Ice Age Life Workbook
- FREE Downloadable Project Imo eko-STEAM: Bridges I Have Built Journal
- Group discussion
- Access to Stone Age Man YouTube: "Arctic Tundra Biome- The search for permafrost" by Emmy winning documentary maker and television hosts, our friends Rob Nelson and Jonas Stenstrom. <https://youtu.be/IFOP14Oxa0E>
- Access to The Wild Classroom Arctic Tundra Biome <https://thewildclassroom.com/biomes/artictundra-2/>

Student will need some form of creative supplies to make a cave painting of one of their favorite animals.

- Rocks. Yep, rocks. Learners will need 1 or two rocks (or pieces of cardboard or craft paper we'll cut to look like rocks).
- Craft paint in assorted colors.

- Paint brushes.
- Cup of water to rinse brushes and something to protect the surface under their painting area.

Learners will also need access to Zoom; a printer, paper, and writing implement if using workbooks; ability to link to supporting YouTube videos; a notebook; a camera and microphone for group discussion is encouraged. Our Project Imo facilitators will moderate chat content for learners not using cam & mic so everyone can lend their voice to the discussion.

Preview Rob and Jonas' amazing Stone Age Man educational content here:

<https://youtu.be/IFOP14Oxa0E>

Come take the journey with us. See you in class!

Next Generation Science Standards

- NGSS 3-LS4-1: Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago
- NGSS 3-LS3-2. Students will use evidence to support the explanation that traits can be influenced by the environment.
- NGSS 3-LS4-2: Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
- NGSS 3-LS4-3: Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

Student Learning Outcomes

1. Students will compare ice age climate with modern climate.
 2. Students will identify a risk of rapid warming in modern arctic tundra biomes.
 3. Students will understand how ice age animal traits helped them survive.
 4. Students will understand basic human evolution as a series of traits and behaviors and be able to correlate this to animal evolution.
 5. Students will visualize how common objects around them could have been used by primitive humans to survive and express themselves creatively.
 6. Students will create a short story about an animal using methods similar to those of ice age ancestors.
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Essential Questions

- How was the world climate different during the last ice age?
- What kind of animals survived in the ice age? Why?
- What traits do humans have that help us survive?
- How do human group behaviors like cooperation help us survive?
- How would humans have adapted behaviorally to survive in the ice age?
- How did early humans create art to express story?
- How could we tell a story in a similar way?
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Introduction!

Activity 1- Ice Age Climate and Modern Challenges

- We'll begin exploring the differences between Earth in the last ice age and today as we compare temperature, glaciation in our "Ice Age Life Workbook" (p.1)
- We'll learn about permafrost and the dangers of rapid global rewarming when we go over to YouTube and watch "Arctic Tundra Biome- The search for permafrost" by Rob Nelson and Jonas Stenstrom. <https://youtu.be/IFOP14Oxa0E>

Activity 2- Ice age Mammals

- We'll continue with our Ice Age Life workbooks and understand some of the adaptations of the megafauna that existed in the ice age (p. 2-3).
- We will use our "Bridges I Have Built Journal" to write down the name of our favorite of these: woolly rhino, woolly mammoth, glyptodon, Smilodon, or short-faced bear.
- We will write down what we think that mammal ate and what the biome it lived in might have looked like.

Activity 3- Ancient Ancestors (workbook p 4-5)

- We will explore our ancient hominin ancestors including *Australopithecus afarensis*, and Neanderthals as we develop an understanding of how primitive human ancestors may have made tools from sharpened stone to adapt. Then we'll consider how we use tools in our modern world in similar ways.
- Our next investigation will set the stage for Lesson 3- Ice Age Villages. We will consider what type of materials primitive people may have used to build shelters to keep them out of the weather and why harnessing fire was such a critical development in our evolution.

- Our exploration of life continues as we compare photographs of fossil evidence from images of the lifeform they represent. Learners will engage in critical assessment of fossil evidence as they make conclusions and present arguments for their choices to the group. (workbook p. 6)

Activity 4- Ancient Art (workbook p 7-8)

- We will develop a list of items that primitive humans may have used to make red paint.
- We will investigate an image of a cave painting from 10,000BCE and make an argument about what we believe the story is the artist(s) were telling.
- We will assess pictures of ancient necklaces and consider how we could make our own using common household items.
- We will refer back to our “Bridges I Have Built Journal” and the animal we selected earlier. We will take a few minutes to sketch out a primitive image of this animal and the biome in which it would have lived.
- We will then paint this image onto a rock or a piece of cardboard we cut out to look like a rock.
- We will share our amazing cave art with the group and tell the stories of our animals.

Reflection

Independent Reflection

Using page 8 of our Ice Age Life workbook, we will reflect upon:

- two things we learned about ice age climate,
- two things we learned about ice age animal traits,
- and build a list of things ancient humans did to keep themselves warm