Unit 1 What Did Dinosaurs Really Look Like?

Dinosaurs lived millions of years ago. They ruled for 150 million years. Movies often show dinosaurs as giant, scary lizards. But real dinosaurs actually looked quite different.

Many dinosaurs looked more like birds than lizards. Take the velociraptor, for example. In movies, this dinosaur looks bigger than a person. Its claws and teeth look long and sharp. But, in fact, velociraptors were not that big or that scary. They were about the size of a turkey. And they were also covered in feathers. They didn't look scary at all.

Unit 2 How To Make A Fossil

How did we learn about the dinosaurs? We learned from fossils.

Fossils are the bodies of long-dead animals. But making a fossil takes a lot of time and luck. First, an animal needs to die. Then, it must be covered in mud. The mud should dry slowly. If it dries too fast, this can destroy the fossil. Also, nothing should touch the bones. Finally, a fossil needs to age for 10,000 years to fully form. This is why fossils are so rare. Only about one bone in a million becomes a fossil.

Unit 3 Mass Extinctions

A plant or animal goes extinct when all of its kind die out. Sometimes, many plants and animals go extinct at the same time. This is a mass extinction.

There have been several mass extinctions. Each time, the conditions changed on our planet. The climate changed, or the air changed. Sometimes, it was because of a volcano or an asteroid. This last happened 66 million years ago. Then, all the dinosaurs died out.

Now the temperature on Earth is rising. This is because of pollution. We should be careful. We might cause the next mass extinction!

Unit 4 DNA Cloning

In movies, scientists bring back the dinosaurs. They find dinosaur DNA and use it to clone dinosaurs.

Unfortunately, this is only fiction. Scientists cannot really do this. DNA becomes damaged over time. Dinosaurs went extinct millions of years ago. So, their DNA is too damaged to use.

However, we could clone other extinct animals. Their DNA is not as old, so it is less damaged. For example, the mammoth went extinct only 10,000 years ago. We might be able to bring it back. Do you want to see a mammoth? Someday, you just might!

Unit 5 Sailing Around The World

The 15th century is known as the Age of Exploration. There were many brave explorers at the time. One of the most successful was Ferdinand Magellan. He came from Portugal.

Magellan believed he could travel to India through the Americas. He left Spain with five ships and a 300- man crew. He sailed to South America. He discovered a path through South America. He called it the Straits of Magellan. Then he sailed across the Pacific Ocean. He lost two of his ships doing this.

Sadly, Magellan died in the Philippines. But his crew continued and returned home.

Unit 6 The Antarctic Adventurer

Roald Amundsen was an extraordinary adventurer. He found the Northwest Passage. The route connects the Atlantic Ocean to the Pacific Ocean. He discovered it in 1903.

In 1911, Amundsen went to Antarctica. He became the first man to reach the South Pole. He traveled with five others and eleven dogs. They traveled for 99 days in the freezing cold.

Amundsen wasn’t finished with his adventures. In 1926, he traveled to the Arctic. He was the first to fly over the North Pole. In 1928, he tried to rescue a lost crewmate. Sadly, Amundsen disappeared and never returned.

Unit 7 The Deep Dive

Most of the ocean is a mystery. We have to use powerful cameras to see what it's like. We've found mountains, canyons, and even waterfalls under the sea. But cameras cannot show us everything. We have to see for ourselves.

Jacques Piccard was a scientist who studied the oceans. He wanted to reach the deepest part of the ocean. So, he built a submarine. He called the place he found "Challenger Deep" because it was so hard to get to. There, he found something amazing: fish and shrimp. Nobody thought any creature could live that deep.

Unit 8 The First Female Astronaut

Valentina Tereshkova was the first woman in space. Surprisingly, she was not a pilot; she was a skydiver. She had done 126 jumps before entering the space program. The program accepted her because of her special talents. At the time, astronauts had to be good skydivers. That's because they had to jump from their spaceships before landing. This was very dangerous. It was also why Valentina was the best choice.

In 1963, Valentina was launched into space. She spent three days in space. She went around the Earth 48 times. After landing, she became world famous.

Unit 9 Oshibana

Oshibana is a Japanese art style. Oshibana artists use pressed flowers to create pictures. They take live flowers and press them flat. Then they dry them. A common way to dry a flower is to press it between two pieces of paper. This removes the water. It also keeps the petals safe.

Oshibana was first practiced in 16th-century Japan. But pressed flowers have been popular for a long time. Knights pressed flowers as souvenirs. Scientists pressed flowers to study them.

Give it a try! All you need is paper, a heavy book, and flowers.

Unit 10 Art Toys

Designer toys or “art toys” are collectibles. Unlike teddy bears and dolls, art toys are not for playing with. They are for viewing.

Artists make art toys. Some are famous painters. Some are comic book artists. Some are even graffiti artists. They make art toys with plastic and other more unusual materials. They make them in limited numbers. They can be very expensive. Some sell for thousands of dollars.

Designer toys first appeared in the 1990s. Now there are many kinds. For example, Qees, Be@rbricks, and Dunnys. Have you ever seen one of these?

Unit 11 Optical Illusions

Your eyes see color, lights, and patterns. But your eyes don't make images; your brain does. Your brain uses information from your eyes to create an image. But your brain also takes shortcuts. It fills in details. These details are not always real. When this happens, a person sees an optical illusion.

Take the Ponzo illusion, for example. It's a drawing of a train track. On it, there are two yellow lines. Which one looks longer? They're of equal length. The top one looks longer because your brain thinks it's further away.

Unit 12 Sand Animation

Traditional animation is made with many pictures. Each picture is drawn differently. When shown quickly, these pictures appear to move.

There are other kinds of animation. Sand animation is a kind of performance art. Artists use sand to make images. They do this using a box with a light inside. This creates an image with the shadows.

Sand artists perform in front of an audience. They use the sand to tell a story. The first sand artist was a student at Harvard University. She made a film in 1968. It was called *Sand, or Peter and the Wolf*.

Unit 13 Disappearing Jobs

Many people wake up to an alarm clock. But how did people wake up before alarm clocks were invented? They used a knocker-up.

Knocker-ups were people. Factories hired them to wake up workers. Knocker-ups were often elderly people or police officers. They would knock on people's windows. They had many tools. They often used bamboo sticks, small stones, or peashooters.

In the 20th century, knocker-ups started disappearing. They lost their jobs because of alarm clocks. Alarm clocks were cheaper and more reliable. What are some other jobs that have disappeared?

Unit 14 Dangerous Jobs

What's the most dangerous job? Some people think it's logging. Over 100 loggers out of every 100,000 die in a work accident.

There are many reasons for this. Loggers use dangerous tools, like chainsaws. They work with big machines. They cut down heavy trees. They also work in hard-to-reach places. So, it's difficult for an ambulance to reach a hurt logger.

Loggers do have rules to stay safe. But many still die every year. Some people believe we should only use machines for this work. But then all the loggers will lose their jobs.

Unit 15 Automation

Automation means using a machine to do a job, instead of a person. In the past, machines only did simple jobs. But nowadays they can do complicated work, too. This worries people. They fear they'll be made unemployed.

But is this true? It's complicated. Automation does replace certain jobs. But automation also creates jobs. In the past, bank workers feared ATMs would steal their jobs. But in truth, more jobs were created. Banks employed more salespeople and accountants. What do you think? What future jobs will be made by automation?

Unit 16 Future Skills

What skills do you need for the future? Businesses believe there are four:

- Businesses want smart social media users.
- Social media is a great way to communicate.
- Mobile phones and computers are also good for communication. We use them to shop and work. Businesses want people who use these technologies well.
- Analytics is the study of information. Businesses study what customers do. This tells them about customers' needs.
- Cloud computing is useful for workers. It helps them work together. It also helps businesses. They can make the necessary changes faster.

Do you have any of these skills?