

DISCOVER
our **AMAZING**
WORLD

CLIL READERS

7 ENGINEERING WONDERS OF THE MODERN WORLD

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Express Publishing

Introduction



Golden Gate Bridge



CN Tower

Empire State Building



Panama Canal



Itaipu Dam



Channel Tunnel

Netherlands North Sea Protection Works



The seven modern wonders of the world, recognized by the American Society of Civil Engineers, are the seven greatest civil engineering achievements of the 20th century. They are wonderful because of their architectural greatness. They are special because they showcase modern man's ability to do the impossible. Each one has a positive impact on the world and is both a monument and an incredible feat of construction.

The Panama Canal



To get from the Atlantic to the Pacific Ocean before 1914, ships either had to travel 8,000 miles (12,875 kilometers) around the coast of South America, or through the dangerous Straits of Magellan. In 1914, however, everything changed when the Panama Canal opened and allowed ships to pass from the Atlantic Ocean to the Pacific Ocean. The French attempted to construct a canal in 1881. The same man who created the Suez Canal, Ferdinand de Lesseps, was in charge of the project, but the attempt failed. The cost and difficulty of the project proved too high. In 1904, US President Theodore Roosevelt bought the French equipment and the rights to build the canal.

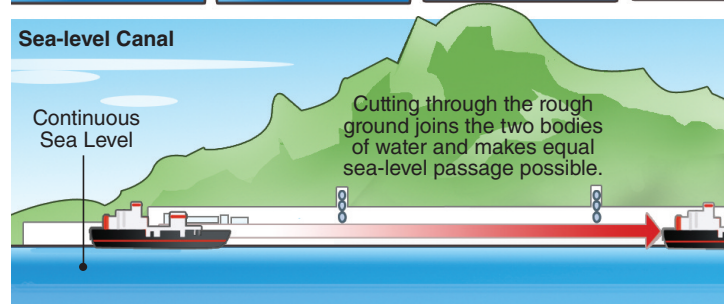
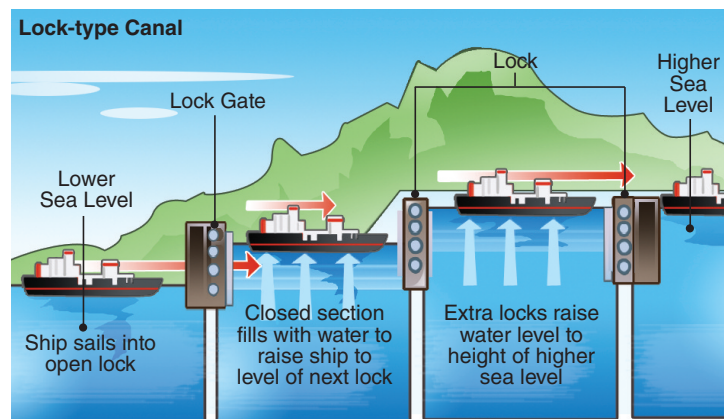


The Americans employed over 56,000 people during the construction and almost 6,000 died as a result of accidents and disease.



The French engineers had attempted to build a canal that stayed at sea level for the entire width of the Isthmus of Panama. Though the distance across was less than 50 miles, the difficult landscape included dense jungles and rocky mountains. To keep the canal at sea level required extensive excavation of this rugged terrain.

When the American engineers took over, they proposed a different solution. They designed a canal with a series of structures called locks, which work like a staircase. The ship sails into the first lock. When the lock doors close, water is allowed into the lock until the ship rises to the water level in the next lock. The ship can then pass to the next lock, and repeat the process.



The Itaipu Dam

Word Bank

(pp. 22-23)

dam (n) = a barrier built across a river in order to stop its flow and collect water

border (n) = a boundary

hydroelectric (adj) = producing electricity using the energy of fast-moving water

power facility (phr) = a factory that produces electricity

reservoir (n) = a man-made lake used for storing water

wing dam (phr) = a barrier that changes the course of a stream

be composed of (phr) = to be formed from

hollow (adj) = empty; unfilled

segment (n) = a section

generate (v) = to produce

powerhouse (n) = a building where electricity is produced

generator (n) = a machine that produces electric power

submerge (v) = to cover with water

turbine (n) = a machine using steam, water, etc. in order to turn a wheel and produce electricity

supply (v) = to provide

energy consumption (phr) = the amount of electricity used by someone

(pp. 24-25)

redirect (v) = to change the direction of something

course (n) = flow

bypass (n) = a channel going around a certain area

pace (n) = speed

install (v) = to put in place

opening ceremony (phr) = a formal celebration to mark the beginning of an event, operation, etc.

inaugurate (v) = to officially start something working

blackout (n) = a time when an area has no power due to electricity failure

power outage (phr) = an interruption in the supply of electricity

occur (v) = to happen

transmission (n) = transfer

disrupt (v) = to interrupt

plunge (v) = to throw; to sink

affect (v) = to have an effect on something

restore (v) = to bring back

resident (n) = an inhabitant

failure (n) = the occasion when something stops working

short circuit (phr) = a faulty connection in the wiring of electrical equipment

transmission line (phr) = a cable that carries electricity over long distances

result in (phr v) = to cause something to happen

instant (adj) = immediate

loss (n) = the act of losing something

Pre-Reading activities

1 a) Choose the correct option.

- 1 The Itaipu Dam is **in Brazil/between Paraguay and Brazil**.
- 2 The name of the dam comes from the **Guarani/Spanish** language.
- 3 The Paraná River is the eighth **largest/longest** river in the world.
- 4 Construction work began in **1975/1982**.
- 5 The dam has the same height as a **56-story/65-story** tall building.
- 6 During its years of operation, the dam has failed to provide electricity **once/twice**.

b) Listen, read, and check.

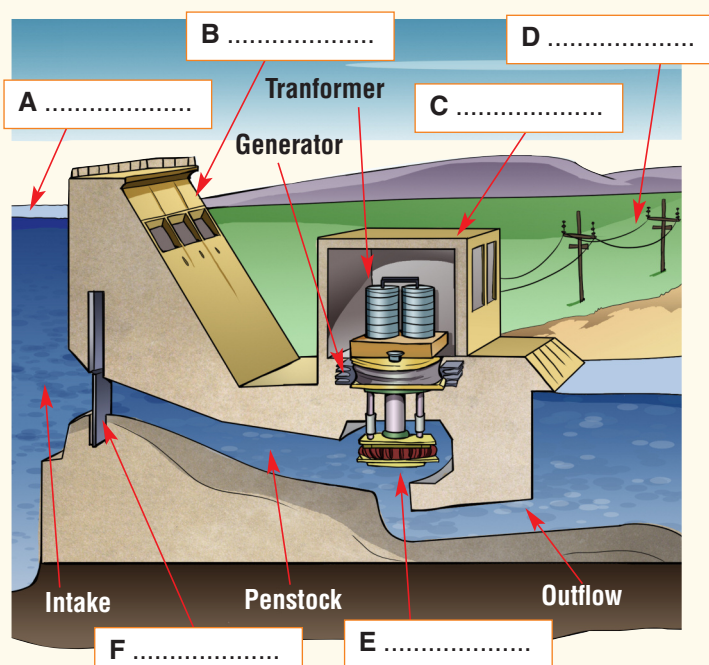
While-Reading activities

2 Match the beginnings of the sentences to their endings.

- 1 The Itaipu Dam provides most of the electricity needed
- 2 The dam lies across one of the longest rivers
- 3 The generators of the dam
- 4 Work on the dam began
- 5 The energy generated by the dam is equivalent to the amount used
- 6 The 2009 blackout caused total darkness

- A by changing the course of the Paraná River.
 B by the city of New York.
 C in the world.
 D in most places in Brazil.
 E in Paraguay.
 F are partly under water.

3 SUBJECT-SPECIFIC VOCABULARY: Label the parts of the hydroelectric power station with these words: *transmission lines, control gate, reservoir, turbine, powerhouse, dam.*



4 Fill in: *consumption, pace, ceremony, bypass, border, facility.*

- 1 The workers changed the course of the river by digging a around the construction site.
- 2 Work on the dam was being done at an amazingly fast
- 3 Nearly 20% of Brazil's energy needs is covered by the Itaipu Dam.
- 4 A hydroelectric power uses the force of water to generate electricity.
- 5 The Itaipu Dam lies on the between Brazil and Paraguay.
- 6 The opening for the dam took place on November 5, 1982.

After-Reading activities

5 Complete the sentences using information from the text.

The ITAIPU DAM in Numbers


- 1 The man-made reservoir behind Itaipu Dam spans an area of
- 2 The dam is able to produce an impressive of energy.
- 3 Each of the twenty generators in the power station has a width of
- 4 The workers had to remove of earth and rock from the site.
- 5 Every second, of water can flow through the turbines.
- 6 During the brief period the facility stopped working in 2009, of power was lost.

6 Use the verbs below in the right form to write a paragraph summarizing the events that took place during the 2009 blackout.

- restore • plunge • occur • affect • disrupt
- result in

Review

Listening Activities

- 1**  Listen to a dialogue about World Wonders. For questions 1-4 choose the correct answer, A, B, C or D.

- 1 What are the speakers mainly discussing?
 - A Ancient World Wonders
 - B Modern World Wonders
 - C Engineering Wonders
 - D Natural Wonders
- 2 What did the woman think about the article she read?
 - A She found it confusing.
 - B She found it boring.
 - C She found it amusing.
 - D She found it interesting.
- 3 Why does the woman mention the Itaipu Dam?
 - A To give an example of an Engineering Wonder.
 - B To compare it to an Ancient World Wonder.
 - C To give an example of a Natural Wonder.
 - D To say it is the best of all Modern Wonders.
- 4 What does the man want to know?
 - A Where the woman found the article she read.
 - B More information on the Wonders.
 - C Who the American Society of Civil Engineers is.
 - D How The Empire State Building was built.

- 2** Listen to a talk about the Itaipu Dam. For questions 1-4 choose the correct answer, A, B, C or D.

- 1 What is the talk mainly about?
 - A The effects building the dam had on the local area.
 - B A comparison between the Itaipu Dam and other hydroelectric power plants.
 - C A description of how the dam works.
 - D The history of the Itaipu Dam project.
- 2 How did building the dam influence the people in the area?
 - A It gave them the opportunity to start new businesses.
 - B It made living in the area more difficult.
 - C It forced them to leave their homes.
 - D It created more farmland for them to work on.
- 3 Why does the speaker ask "But was it all bad news?"?
 - A To find out what the audience think on the subject.
 - B To introduce the next section of his talk.
 - C To say there is new information about the dam.
 - D To emphasize how bad building the dam was for the area.
- 4 What does the speaker say about the Brazilian and Paraguayan governments?
 - A Their efforts to save the local environment were not enough.
 - B They should have replanted more forests.
 - C They did more harm than good to the environment.
 - D They managed to rescue many species of wildlife.

Amazing facts

Did you know?

Until December 1970, not only vehicles but also pedestrians had to pay a 2) to use the Golden Gate Bridge.

Since 1997, more than 17 million people have visited the Itaipu Dam to take a 3) around one of the world's largest hydroelectric power stations.

The Zuiderzee 4) was formed in 1287, when the 5) that held back the North Sea were damaged and water flooded the farmland in the area.

The amount of material removed from the site during 6) works of the Panama Canal would be enough to bury the whole island of Manhattan under 12 feet of earth.

Each of the 11 7) that were used in the construction of the Channel Tunnel had the same length as two soccer fields.

Every year, the Empire State Building holds the Run-Up, a 8) in which hundreds of athletes compete to see who will be the fastest to run up the 1,576 steps to the 86th floor.

The CN Tower turns down outside lights during bird migration seasons to ensure birds have a safe 1)

1 Fill in: *dikes, race, tour, boring machines, excavation, toll, flight, bay.*

2 **ICT** Do an online search to find out one more interesting fact about each of the Seven Engineering Wonders of the Modern World. Present the facts to the class.

7 ENGINEERING WONDERS OF THE MODERN WORLD

Take a trip around the globe to discover the greatest engineering genius of the 20th century and the will of modern man to achieve the unachievable. The Seven Engineering Wonders of the Modern World, as recognized by the American Society of Civil Engineers, testify to the unbelievable intellect required and sacrifices made to construct seven of the most recognizable and admired structures on the planet.

Learn how and why they were conceived and built and who was involved through accurate information, stunning images, and interesting facts.

Components

- Reader
- Multi-ROM

DIGI MATERIAL

cross-platform application
(iOS, Android, Windows, MacOSX)



Express Publishing

ISBN 978-1-4715-0962-9



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