
Activity 1.1.1 History of Civil Engineering and Architecture

Introduction

Can you name any of the Seven Wonders of the Ancient World? Each was a feat of civil engineering and architecture. What causes structures such as these to fill us with awe even today? What is it that makes them seem more wondrous in our time of modernization? These structures have paved the way for many new advances in the design of the structures you see today.

In this activity you will learn about the history of civil engineering and architecture. You will see differences between the two professions and learn of their beginnings.

Equipment

- History of Civil Engineering and Architecture presentation

Procedure

In this activity you will investigate the history of civil engineering and architecture. You will see differences between the two professions and learn of their beginnings.

1. Define civil engineering.

A branch of engineering that specifies in the design and construction of public works, such as bridges and dams.

2. Define architecture.

The art and science of designing buildings for human habitation

3. Describe the origination of the concept of architecture?

Architecture originated when humans started to become agrarian and had to live in one area where they built and designed buildings for habitation.

4. In ancient times how were building materials chosen?

Since travel was difficult humans used the materials which were readily available near them.

5. Give two examples of vernacular architecture.

An igloo consists of snow and ice which are found in the Eskimos home land. An African hut at banu is also a example of vernacular architecture.

6. Name and describe the type of system used to create many early buildings.

The system used in many early buildings was Bering walls which were solid and supported other Bering walls and the roof of the building.

7. What was the purpose of the Egyptian pyramids? Mexican pyramids?

Pyramids in Mexico were mostly used for the performance of sacrifices and Egyptian pyramids were the tomb of pharoes.

8. What kind of construction method was used to build the Parthenon? Made a simple sketch to illustrate.

The Parthenon used a method called Post and lintel construction in which vertical pillars and horizontal supports supported the main structure.

9. What problem in architecture led to this form of construction?

The use of only Bering walls would not allow for windows this could be averted with Post and Lintel construction.

10. Explain how an arch is created.

Stones are placed in a frame and then a keystone is placed on top which allows for the frame to be removed.

11. How is the vault used in civil engineering?

The vault is used as tunnels.

12. Give an example of an arch and dome system.

The Parthenon is an example of a arch and dome system.

13. Give an example of a modern material we have that was not available to the ancients. How did this restrict construction in ancient times?

Iron a strong metal was not available to the ancients. With iron they could have built larger structures more efficiently.

14. What was the purpose of the Roman aqueducts?

The aqueducts transported fresh water to Romes large cites.

15. Compare ancient Greek roads to ancient Roman roads.

Roman roads used large stone slabs and smaller rocks on top while the greeks used special ground and and dirt to make the roads.

16. Describe an ancient Roman bridge.

The Romans made bridges out of large arches which were made from concrete and stone.

17. How did building materials and methods change after the Romans?

After the Romans iron and steel were introduced which allowed for larger and more efficient structures. this was also helped by the invention of cranes, blast furnaces, etc...

Conclusion

1. Give an example of a modern pyramid not shown in the presentation. How does its function differ from that of the Egyptian pyramids? What do you think accounts for this difference?

The pyramid house functions as a living quarters compared to a tomb. Modern culture mostly accounts for the difference since people don't want large tombs since it isn't considered a great thing.

2. Give an example of a modern structure that uses an arch and dome system.

The United States Capitol building is made from an arch and dome system.

3. What is the main purpose of modern roads? How is the cost of modern roadways defrayed?

Modern roads are made so cars and other vehicles can move quickly and efficiently. The cost of modern roads are defrayed through the taxpayers taxes, with this money they can keep the roads up and running.