Wemp

Internet Enriched Lesson Plan

Bridges

**Overview:**

Students will learn about different types of bridges that architects can build. They will research different bridges and discover who and why they were built. They will then have the opportunity to play with different types of simulations of bridges and work through how to put together a sturdy bridge. Finally they will put together an online presentation that will demonstrate their new knowledge of bridges.

**Objectives:**

Students will be able to identify different types of bridge structures.

Students will be able to choose the correct bridge type for a given situation.

Students will be able to create different types of bridges and simulate their use.

Students will be able to create online content to share their knowledge of bridges.

**Materials and Resources:**

PBS Building Big Website - [PBS Building Big website](http://www.pbs.org/wgbh/buildingbig/bridge/index.html)

Bridge Basics - <http://www.pbs.org/wgbh/buildingbig/bridge/basics.html>

Bridge Challenge - <http://www.pbs.org/wgbh/buildingbig/bridge/challenge/>

Build Bridges for Fun -<http://www.learn4good.com/games/simulation/build_bridge_across_canyon.htm>

Bridge Simulator - <http://pages.jh.edu/~virtlab/bridge/bridge.htm>

Famous Bridges - <http://www.pbs.org/wgbh/buildingbig/bridge/index.html>

Presentation - [www.prezi.com](http://www.prezi.com)

<http://www.slideshare.net/>

**New to Bridges**

Begin your bridges activity by learning about a few different bridge styles. Research three different famous bridges from the [PBS Building Big website](http://www.pbs.org/wgbh/buildingbig/bridge/index.html). Click on the different bridges in the list on the bottom left of the window. Each of the famous bridges has information that you can use to highlight what makes it famous.

After creating your presentation, you will need to learn about the basics of bridges. Go to [Bridge Basics](http://www.pbs.org/wgbh/buildingbig/bridge/basics.html) to learn about the types of bridges, how they are typically used, and where they are typically applied. You will need this information to complete the [Bridge Challenge](http://www.pbs.org/wgbh/buildingbig/bridge/challenge/index.html). In the bridge Challenge, you will be helping the citizens of Craggy Rock to choose the appropriate bridge type for the different areas of town that need bridges. Make sure that your research is solid from before, because each location has a problem that must be addressed before it is done.

**Try out your bridge skills**

Now that you are familiar with the different types of bridges, where they can be used, and how they work, it is time to put your new knowledge to use. Go to the [FWG Bridge Simulation](http://www.learn4good.com/games/simulation/build_bridge_across_canyon.htm). This is a game where you are tasked with creating a bridge that will transport the beings to the other side of a cliff. Remember to take into account the different types of bridges that you practiced with earlier.

**Design Your Bridge**

Now that you are an architect, let’s design your own custom bridge! Go to the [Bridge Simulator](http://pages.jh.edu/~virtlab/bridge/bridge.htm) website. This is a more advanced simulation that will allow you to calculate forces on your bridge. Add nodes for where your bridge members will attach. Add members to your bridge to create the actual pieces that will make up the bridge. Finally, add a force to your bridge. You can make this force anything you want. Add a rolling connection and a fixed connection to each end of your bridge. Once you have included all of your components to your bridge, calculate it! (NOTE: if you have problems, check that your members + 3 are equal to nodes X 2 )

**Put it all together**

After you choose three of your favorites, create an online presentation using [Prezi](http://www.prezi.com), [Slideshare](http://www.slideshare.net), or another of your choice. Your presentation should highlight the vital statistics of the three bridges, what type of structure it is, who built it, and why it is one of your favorites. (What made you choose it?) You will also need to include information about your two simulations.

* What bridge types seemed to work the best to transport your creatures? Why do you think they worked well?
* What are the benefits to being able to simulate forces on a bridge?
* What else do you think you could do with the simulation that will calculate forces?