

Bridge Project Instructions

Students,

You will be working individually and this will need to be completed by June 17 for presentation. The testing will be conducted on June 15 and 16. Each student will need 200 craft sticks for the project. These can be found at stores like Michaels, Hobby Lobby, Family Dollar, Dollar Tree, and Dollar General. Students can learn some information on Bridges by conducting research.

Learning Objectives

Be able to discuss the history of bridges.

Be able to use the scientific method in planning a bridge.

Be able to use mathematics in designing a bridge.

Teacher Notes:

This project is to be assembled in class only. Individual part can be done at home if needed. Your bridge will be made of popsicle (craft) sticks and you must document your progress of your work for the PowerPoint Presentation. At the end of this project, every team will turn in a PowerPoint that outlines the scientific method conducted.

Question that we will attempt to answer:

Which bridge design can support the most weight?

Bridge Project Sequence: (PowerPoint with at least 6 slides not including title slide)

- Initial research of history of bridges
- Project Proposal (Design Blueprint)
- Questions, hypothesis, and materials used
- Construction (Photographs)
- Testing
- Data analysis with conclusion
- PowerPoint presentation



Project Rules/Guidelines:

- Each student will have a maximum of 200 flat popsicle (craft) sticks. You must use at least 150.
- White Elmer's glue ONLY. NO painting or gorilla glue.
- Avoid excess glue and soaking sticks in glue. This adds undesired weight and flexibility.
- Bridge must be a minimum of 35 cm or 14 inches in length.
- You may use whatever bridge design you think is the best.

Bridge Testing:

- Your bridge will be set on two objects with a span space of 25 cm or 10 inches.
- Weight will be added slowly on the bridge until it flexes or breaks. If you don't want your bridge to break, you can stop at any moment, but the last weight will count. The bridge that holds the most weight will win a prize.

Students will use Tuesday (8th), and Wednesday (9th) for research and planning their design building their bridges.

Students will use Thursday (10th), Monday (14th) and Tuesday (15th) for creating presentations and building their bridges. (Students can assemble parts of their bridges at home any night 10th – 14th, but bridge must be assembled at school.)

Students will start testing their bridges on Wednesday (16th) or sooner. Students will complete presentation with conclusion after testing for submission on Thursday (17th)

Rubric for Building a Bridge Project

Overall Expectations:				
<ul style="list-style-type: none"> · A structure has both form and function. · Structures are affected by forces acting on them. · Structures need to be strong and stable to be useful. · Structures have a purpose. · The form of a structure is dependent on its function. 				
Criteria	Level 1	Level 2	Level 3	Level 4
Planning · Hypothesis	Makes random “guesses” about possible outcomes of simple procedures; with support, plans for safe experimentation.	Makes simple predictions about the outcome of the procedure; with some support, plans for safe experimentation.	Makes predictions, based on personal experience, about the outcome of the procedure; plans for safe experimentation.	Makes predictions, based on prior knowledge from explorations and investigations, about the outcome of the procedure; plans for safe experimentation, showing some awareness of variables to be considered.
Performing · Safe use of selected tools and equipment · Design, construction and testing of structure · Lists procedures	Safely uses teacher selected tools and equipment to build with; with support, designs, builds, and tests a structure to answer a question; with support, lists a few procedures for building a bridge.	Selects, with support, and safely uses tools and equipment to build with; with limited support, designs, builds, and tests a structure to answer a question; lists some procedures for building a bridge .	Selects and safely uses tools and equipment to build with; independently designs, builds, and tests a structure to answer a question; lists most of the procedures for building a bridge.	Selects and safely uses tools and equipment to observe and measure; independently and consistently designs, builds, and tests a structure to answer a question; lists all procedures for building a bridge
Recording data and observations	With support, records data and observations orally, in pictures, in written words, and/or in tally charts.	Records some data and observations orally, in pictures, and/or in written words or sentences.	Records and organizes data and observations using standard measurements, sentences, lists, and/or simple labeled diagrams.	Records and organizes data and observations using standard measurements in simple tables, graphs, or charts, or in labeled diagrams
Analyzing and interpreting data and observations	Proposes a simple answer to the question being investigated, on the basis of observations; suggests that might be changed about the solution.	Draws a simple conclusion on the basis of observations; identifies some things that could be done differently to change the solution.	Draws some conclusions on the basis of data gathered and observations; identifies and explains some changes that could be made to the plan to improve the solution.	Draws several conclusions on the basis of data gathered and observations; identifies and explains some changes that could be made to the plan to improve the solution and gives reasons for the changes.
Communicating results · PowerPoint presentation	With prompts, orally recounts procedures and results of building a structure; with support, answers a specific question.	Orally presents some procedures and results of building a structure; answers a specific question in a simple manner.	Orally presents most procedures and results of building a structure; answers a specific question	Orally presents all procedures and results of building a structure; answers a specific question thoroughly
Comments and Suggestions for Improvement: 				

Parent signature: _____ Student Name: _____