



YALE NATIONAL INITIATIVE

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Curriculum Units by Fellows of the National Initiative

2008 Volume IV: Bridges: The Art and Science for Creating Community Connections

Learning by Mistakes-Bridge Failures

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In this unit middle school students will gain insight into the technology and evolution of bridges. Using research and an interdisciplinary approach, they will learn the history of bridges, specifically bridges that have encountered structural or environmental challenges. In the first lesson students will research the history of bridges constructing a classroom time line to display the evolution of materials and technologies. In the second lesson, students will select an activity according to their favorite subject. Students may select to build a cofferdam as the Romans did for their bridge foundations. Other students may choose activities where they may construct an arch, or determine the relationship between a bridge's span and load. They may choose to paint a famous bridge, or reconstruct a famous battle of war in a diorama. In the 3rd lesson students will select a famous bridge that has failed. Using the information in this unit as a starting point, they will reconstruct the bridge and determine the reason for its demise. In the 4th lesson students will research the condition of bridges in their local areas, becoming advocates for bridge safety. At the conclusion of the unit, students will be knowledgeable about the history of bridges, and the technology that has led to the incredible bridges of today. They will be able to reason why bridges have failed in the past, and hypothesize about what bridges might fail in the future.

(Developed for Gifted and Talented, grades 6-7; recommended for Gifted and Talented, Middle School grades 6-7)

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