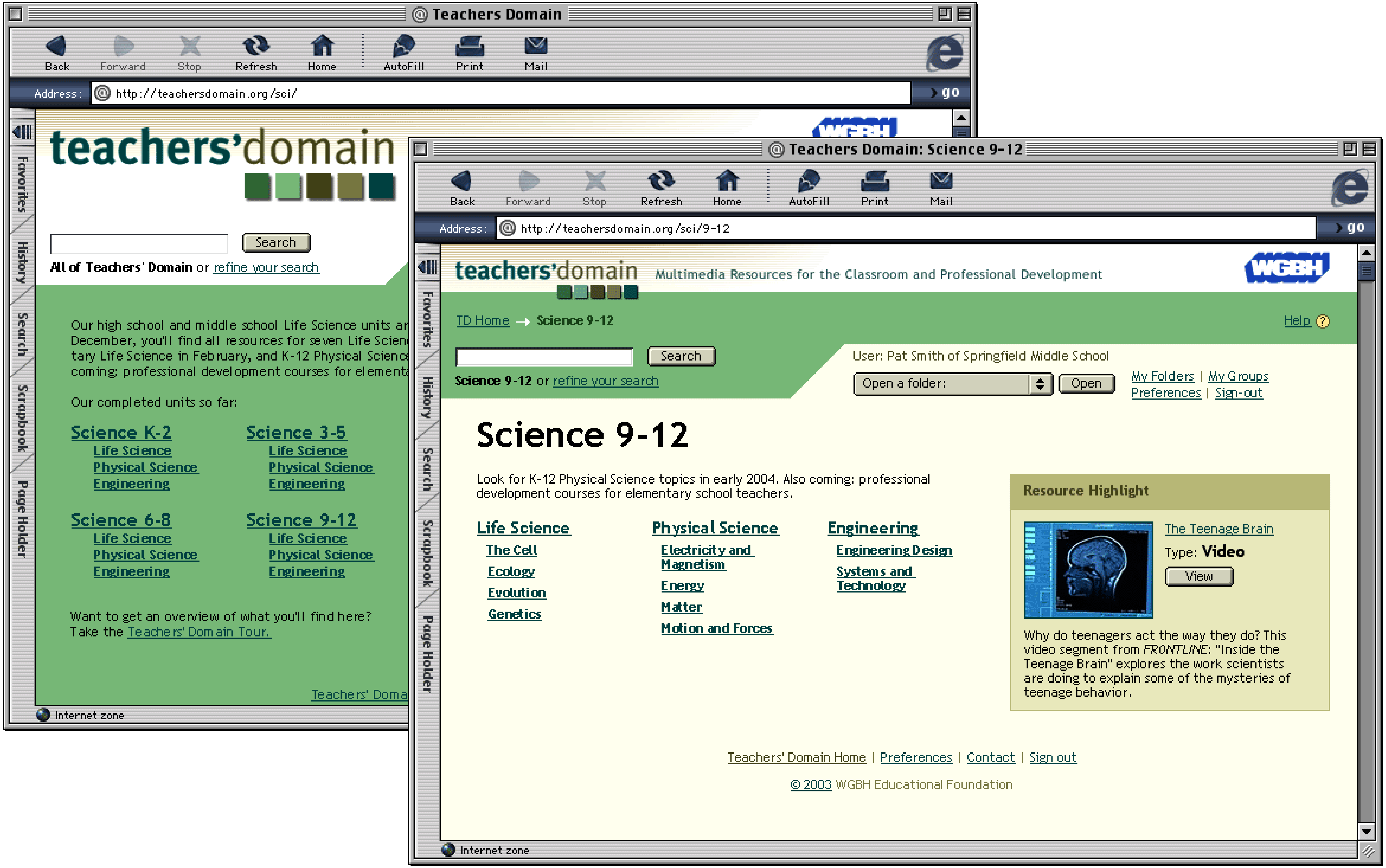

http://teachersdomain.org/sci/

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All of Teachers' Domain or refine your search

Our high school and middle school Life Science units ar
December, you'll find all resources for seven Life Scien
tary Life Science in February, and K-12 Physical Scienc
coming: professional development courses for elementa

Our completed units so far:

Science K-2
- Life Science
- Physical Science
- Engineering

Science 3-5
- Life Science
- Physical Science
- Engineering

Science 6-8
- Life Science
- Physical Science
- Engineering

Science 9-12
- Life Science
- Physical Science
- Engineering

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Teachers' Doma

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http://teachersdomain.org/sci/9-12

teachers'domain Multimedia Resources for the Classroom and Professional Development

TD Home → Science 9-12

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Science 9-12

Look for K-12 Physical Science topics in early 2004. Also coming: professional development courses for elementary school teachers.

Life Science
- The Cell
- Ecology
- Evolution
- Genetics

Physical Science
- Electricity and Magnetism
- Energy
- Matter
- Motion and Forces

Engineering
- Engineering Design
- Systems and Technology

Resource Highlight

The Teenage Brain

Type: **Video**

Why do teenagers act the way they do? This video segment from *FRONTLINE*: "Inside the Teenage Brain" explores the work scientists are doing to explain some of the mysteries of teenage behavior.

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Multimedia Resources for the Classroom
and Professional Development

Teachers' Domain offers:

- **High-quality multimedia resources from public television**
- **Correlations to national and state curriculum standards**
- **Media-rich lesson plans**
- **Customizable resource folders**

Major funding for this
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National Science Foundation

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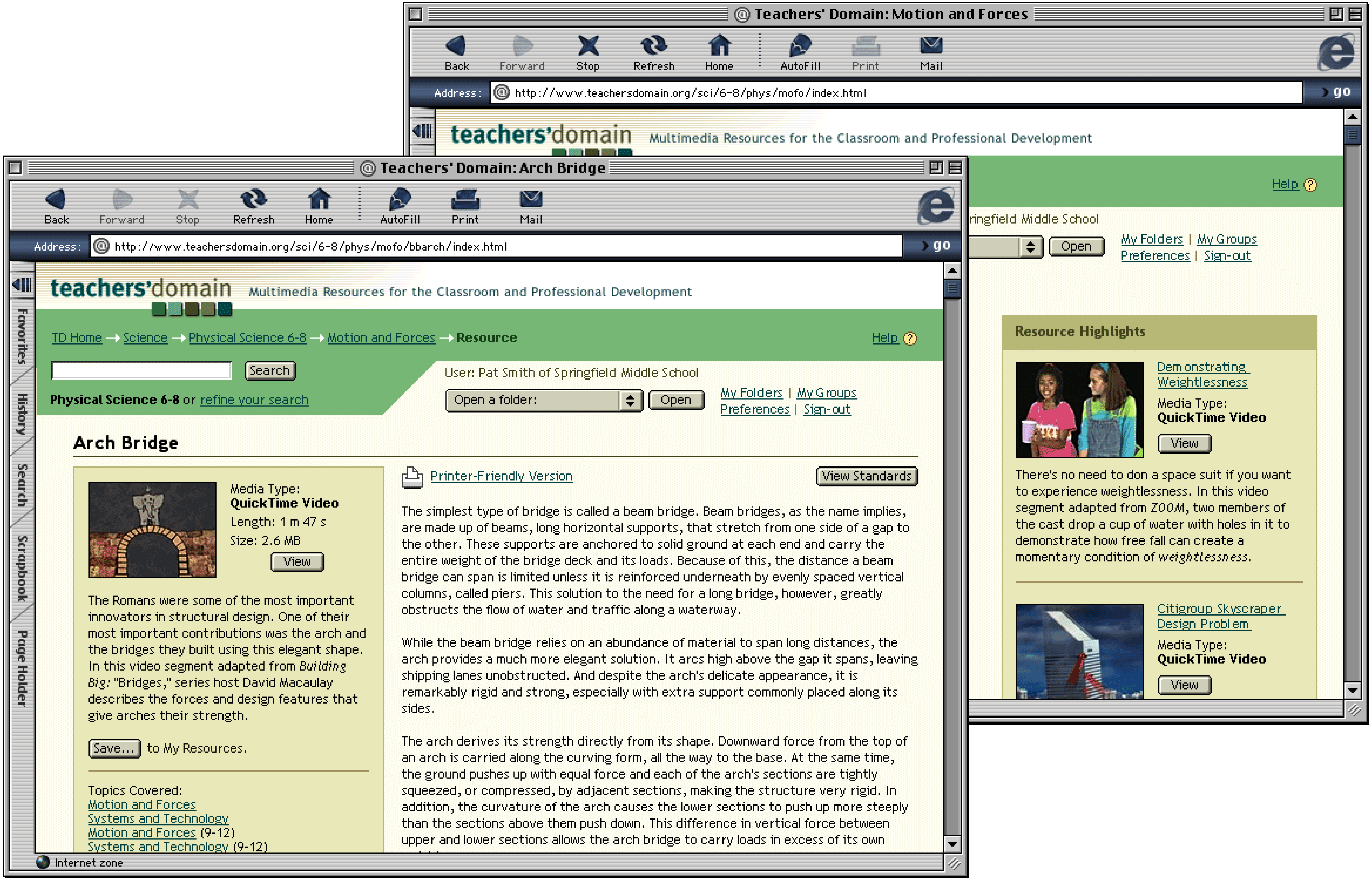

ringfield Middle School

Resource Highlights

Demonstrating Weightlessness

Media Type:
QuickTime Video

There's no need to don a space suit if you want to experience weightlessness. In this video segment adapted from *ZOOM*, two members of the cast drop a cup of water with holes in it to demonstrate how free fall can create a momentary condition of *weightlessness*.

Citigroup Skyscraper Design Problem

Media Type:
QuickTime Video

Physical Science 6-8 or refine your search

User: Pat Smith of Springfield Middle School

Arch Bridge

Media Type:
QuickTime Video
Length: 1 m 47 s
Size: 2.6 MB

The Romans were some of the most important innovators in structural design. One of their most important contributions was the arch and the bridges they built using this elegant shape. In this video segment adapted from *Building Big*: "Bridges," series host David Macaulay describes the forces and design features that give arches their strength.

Save... to My Resources.

Topics Covered:
Motion and Forces
Systems and Technology
Motion and Forces (9-12)
Systems and Technology (9-12)

The simplest type of bridge is called a beam bridge. Beam bridges, as the name implies, are made up of beams, long horizontal supports, that stretch from one side of a gap to the other. These supports are anchored to solid ground at each end and carry the entire weight of the bridge deck and its loads. Because of this, the distance a beam bridge can span is limited unless it is reinforced underneath by evenly spaced vertical columns, called piers. This solution to the need for a long bridge, however, greatly obstructs the flow of water and traffic along a waterway.

While the beam bridge relies on an abundance of material to span long distances, the arch provides a much more elegant solution. It arcs high above the gap it spans, leaving shipping lanes unobstructed. And despite the arch's delicate appearance, it is remarkably rigid and strong, especially with extra support commonly placed along its sides.

The arch derives its strength directly from its shape. Downward force from the top of an arch is carried along the curving form, all the way to the base. At the same time, the ground pushes up with equal force and each of the arch's sections are tightly squeezed, or compressed, by adjacent sections, making the structure very rigid. In addition, the curvature of the arch causes the lower sections to push up more steeply than the sections above them push down. This difference in vertical force between upper and lower sections allows the arch bridge to carry loads in excess of its own