



# Science in the City



The Teacher's Handbook



## Structural Engineering and Web Design

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## Module 4 HTML, Video Production, Trusses

### East Oakland Infrastructure Bridges & Access

#### The Problem

Oakland is changing. There is a distribution of resources in Oakland that is unfair and prevents people from getting access to wealth. The largest number of high paying jobs are in Silicon Valley and San Francisco. Oakland residents have a hard time accessing the wealth of many of those jobs because the Bay Area's Public transportation does not travel to those financial centers quickly.

#### Objective(s)

- Students will come to understand that structural integrity is the value given to how Students will learn to use video editing software to create video documentaries.
- Students will learn to use iMovie & FinalCut Pro
- Students Will learn about Trusses and video integrity

#### What will we teach

- a) Continued instruction on html coding and website design.
- b) Basics of structural integrity
- c) The strength of Types of Truss level 2

#### Activities

##### 1. Do It

- Build a Truss based bridge for public transportation

<https://www.youtube.com/watch?v=llhSEwUE6cY>

##### Explain It

- Students will create a video documentary about Truss, building strong bridges, and public transportation

##### 2. Read It

- Article on Truss Structure
- Article About Bridge Building

##### 3. See It

- [Lab Video](#)
- Video about electric trains



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- Video about Trusses ([King Post Truss](#), Pratt Truss, Warren Truss, North light Truss, Fink Truss)
  - Types of [Trusses](#)  
Define Truss  
Draw a picture of a  
Howe are they different  
[Electric Trains](#)

### Agenda

Time	Task	Description	Needs
10 min	Introduce The Problem	Oakland is changing. There is a distribution of resources in Oakland that is unfair and prevents people from getting access to wealth. The largest number of high paying jobs are in Silicon valley and San Francisco. Oakland residents can't access the wealth because the Bay Area's Public transportation will not allow people to take public transportation to get back and forth easily and at a low cost.	Have problem in the handout.
20 min	Map Analysis	<b>Directions:</b> Students will review a map of the Bay Area and will identify where the majority of the jobs are and will explore the public transportation options: <ol style="list-style-type: none"> <li>(1) Identify the major job centers (Facebook, yahoo, hp, google)</li> <li>(2) Identify how long it will take to take public transportation there using Google maps</li> <li>(3) What time would a person need to leave to get to work by 8:00am? What time would they get home if they left work at 5:00pm?</li> <li>(4) What problems does this create?</li> </ol>	-Students will need laptops and assistance using Google Maps.
10 min	Designing Solution	<b>Directions:</b> Students will use whiteboards to design a potential solution to the transportation issue	- Students will work in groups to design a solution
10 min	Share Out	Students will share their potential solutions.	-The teacher can use the slides to facilitate the discussion.
10 min	Reading	Students will read the article Oakland needs a new bridge.	Article link <a href="#">here</a> :
<b>DAY 2</b>			
10 min	Problem Review	<b>Directions:</b> Students will work with their table groups and discuss two questions: <ol style="list-style-type: none"> <li>(a) How can new transportation</li> </ol>	- have slides available & have notes available in the handout



		options help people with access to jobs? (b) Where can we build better public transportation? How can we do it?	
<b>5 min</b>	<b>Types of Trusses</b>	<b>Directions:</b> Students will watch a video about the types of Trusses.	- have slides available & have notes available in the handout
<b>20 min</b>	<b>Drawing Truss Types</b>	<b>Directions:</b> Students will use the space below to draw images of the different types of Trusses (King Post Truss, Pratt Truss, Warren Truss, North Truss, & Fink Truss)	- have slides available & have notes available in the handout
<b>10 min</b>	<b>Teacher Review</b>	The teacher will review the types of trusses King Post Truss, Pratt Truss, Warren Truss, North Truss, & Fink Truss	- have slides available & have notes available in the handout
<b>10 min</b>	<b>Truss Reading</b>	Students will read an article about Truss.	- have slides available & have notes available in the handout
<b>10 min</b>	<b>Lab Introduction</b>	<b>Directions:</b> Students will watch the video explaining the Bridge building laboratory	- have slides available & have notes available in the handout
<b>DAY 3</b>			
<b>50 min</b>	<b>Laboratory</b>	Students will build a bridge model for testing. Students can design a bridge with any type of Truss they would like	- have slides available & have notes available in the handout
<b>10 min</b>	<b>Clean up</b>	Student will clean up the lab in preparation for text day.	- have slides available & have notes available in the handout
<b>DAY 4</b>			
<b>20 min</b>	<b>Testing</b>	<b>Directions:</b> Using the scale and weight, the class will test the maximum weight bearing load of the bridge	- have slides available & have notes available in the handout
<b>10 min</b>	<b>Documentary Prep</b>	<b>Directions:</b> Students will list the top 10 ideas to include in their documentary about how to build better public transportation.	- have slides available & have notes available in the handout

<b>15 min</b>	<b>Website Developing</b>	<b>Directions:</b> Students will select a website that has a documentary as a model for their website.	- have slides available & have notes available in the handout
<b>DAY 5</b>			
<b>20 min</b>	<b>Coding instruction</b>		
<b>40 min</b>	<b>Web Development</b>		