Brick by Brick: Learning HTML with Legos

Summary:

This lesson is meant to help students bolster their understanding of web pages; the fun is in building it how you want! Legos are a fantastic representation of this idea, because a basic Lego set has a certain number of pieces, and it is up to the builder to determine what it becomes. Web pages are the same! You can pick a color scheme, a style, specific elements, and it is all decided by YOU!

Audience: K-12; the activity can be as in-depth as needed for older students, while also as basic as needed for younger students.	Plugged or unplugged: Unplugged

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California State Standards for English Language Arts:

- CCSS.ELA-LITERACY.W.K.2: Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.
- CCSS.ELA-LITERACY.W.2.2: Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.
- CCSS.ELA-LITERACY.W.3.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- CCSS.ELA-LITERACY.W.4.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- CCSS.ELA-LITERACY.W.5.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- CCSS.ELA-LITERACY.W.6.2: Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
- CCSS.ELA-LITERACY.W.7.2: Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
- CCSS.ELA-LITERACY.W.8.2: Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
- CCSS.ELA-LITERACY.W.9-10.2: Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- CCSS.ELA-LITERACY.W.11-12.2: Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

Materials needed:	Prerequisite skills:	Time Estimate:
• Legos • Perkins brailler + braille paper (optional)	Background knowledge on Legos.	45 mins. Total

Objectives:

Students will

a. Learn what HTML stands for.
b. Explore the basic structure of HTML.
c. "Build" a web page.
d. Create a function.

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To begin the lesson, build on any previous knowledge students may have with using Legos as building blocks. Each individual piece works with a variety of other pieces to build something larger, and they must fall into place with each other, have correct orientation, and be stable so as to stay complete.

Similarly, building a web page with code, or creating a function or script, requires planning, knowledge, and some basic rules to keep everything together so as not to break anything. One great example of a Lego project that would help explain this is a car! You can build a large chunk of the car, people will know it is meant to be a car, but until it can move under its own weight, it is not functionally a car, right? Cars also come in various shapes, sizes, configurations, and colors. A house is another great project, where you can add a plethora of elements. 1 window, 20 windows, any amount of bedrooms…

Instructional Sequence:	
1. Introduce HTML	1. HTML stands for Hypertext Markup language. It's a fancy term that means "Giving names and functions to websites so that people can tell the differences between them". 2. There are 4 basic HTML tags. Tags themselves are like names, and they tell the computer how to call things. They all start with the **Less Than** symbol, <, and end with the **Greater Than** symbol, >. a. The <html> tag. This tag tells the computer the kind of file it is reading. All of the other information goes inside of this tag, or else it doesn't get read by the computer. b. The <head> tag. This tag is where all of the information that people see on a web page is. Style is one example, that means colors, text size, where things are located, as well as the title of the page, and stuff called **Meta data** that describes other stuff. c. The <title> tag names the page. d. The <body> tag is like in an email, the largest amount of information is found here. You'll find **headings, paragraphs, lists, tables, and so much more!**
2. HTML Structure	1. Every HTML document will start with the following line: <!DOCTYPE html> so that the computer knows what version of HTML to display. Similarly, a Lego base plate serves as the starting point for building a Lego structure. It provides the necessary stability and structure for additional blocks to be added on top of it. 2. Both the <!DOCTYPE html> line and a Lego base plate serve as fundamental elements that set the stage for everything that comes after them. Without them, the rest of

	the HTML document or Lego structure would not be able to function properly or exist at all…at least, not without some stability issues! 3. The <html> tag would be the next piece of the puzzle. It holds ALL of the information that the computer interprets- the styling (colors, spacing, etc.), headings, paragraphs, lists, EVERYTHING! The finished project, complete with color descriptions, part descriptions, would be the equivalent–all of the separate parts on a Lego project come together as one final project. 4. The <head> tag would come next, with the <title> tag after it. This is what the browser tab displays at the top. It helps you switch between tabs, and know which is which! In the Lego project, you have to give your project a name so that everyone can identify it–even if sometimes it is obvious based on the content! 5. Next, you would have a <body> tag! This has all of the text, any elements like buttons, edit boxes, combo boxes, drop down menus, and so much more! With Legos, this varies with the person creating the site. Color choices because you like them, order changed because your ideas came to you as you were working…It's the same idea. You might have a few different parts of your Lego project done before putting them all together, you might have to take it apart and change it before being satisfied with it. 6. Finally, closing tags! These are super important because they can break your code if not added. Some get closed faster than others. Like the <title> tag gets closed immediately! The <html> tag is the last tag to be closed. Example: <!DOCTYPE html> <html> <head> <title>Max's Tiger</title> </head> <body> My Magical Tiger My tiger has 4 legs, a tail, a head, and fur. The fur is red and black, and the front paws are gray. </body> </html>
3. Building a Page	1. Now students get to try! You can have them build any number of projects, as long as they have several parts that form one big project. Cars, houses, towers, bridges, or even animals are great, as they have several components that can be compared to HTML structure. 2. Using a Perkins, or paper, students can emulate the code

	above. 3. Here is a Downloadable cheat sheet for symbols. The less than and greater than symbols are under "Grouping Punctuation".
4. Conclusion!	1. You should have students reflect on the activity, either orally or through writing using the CA State Standards as reference, as well as using the key words in their writing to demonstrate understanding of the words and their use/function in HTML.