

Hands on Computer Science Activity 1

Topic: Computer Science

Learning Objective: Building a personalized web page from scratch. Students will learn how to use the computer markup language, HTML and CSS, to make a personalized website about their interests and hobbies. HTML and CSS are markup languages, which are used to create the presentation structure of the Web pages. With the understanding of these two markup languages, students are able to use it as their beginner platform to create better and more interactive web pages.

Alignment with NGSS Grades 3-5

Crosscutting Concepts and Connections to Engineering, Technology, and Applications of Science
Systems and System Models

- A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot.
- A system can be described in terms of its components and their interactions.

Connections to Engineering, Technology, and Applications of Science for Grades 3-5
Interdependence of Science, Engineering, and Technology

- Science and technology support each other.

Performance Expectations and Disciplinary Core Ideas for Engineering Design in Grades 3-5

- 3-5ETS1-1 Define a simple design problem reflecting an need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Materials:

- Projector (maybe)
- Computer lab - Programs: Google Chrome and Caret (a chrome extension application)

Detailed Description

- Activity
 - Get settled in the lab. Discuss what we learned overall so far. Transition into today's lesson.
 - Discuss the amazing World Wide Web and how there are numerous websites online and ready for our access.
 - Ask students if they know how to build these websites or used some web platform that allow personalization, such as Wordpress, Myspace, Neopets.

- Introduce what we doing today, which is building your own offline web page.
 - Introduce the markup languages HTML and CSS.
 - Explain the difference between programming languages and markup languages.
 - Programming languages describe function. You are able to build something with these languages.
 - Markup languages describe presentation. You are making the web page look pretty with these languages.
 - HTML stands for HyperText Markup Language
 - CSS stands for Cascading Style Sheets
 - Vocabulary:
 - Browser – a program that allows users to view web pages and navigate through them
 - Syntax – a set of rules that defines a correctly structured code
 - Tag – separate normal text from HTML Code and defines a style
 - Teach a few useful tags on the whiteboard.
 - <body> - defines your webpage, write your code here!
 - <h1> - HTML heading, largest size
 - <h6> - HTML heading, smallest size
 - <p> - creating a new paragraph
 - - making the text bold
 - <i> - italicize the text
 - - adding an image to the page, not background image
 - Demonstrate how to use these tags on the whiteboard. Then ask students to help me write a few more HTML code.
 - Demo on the computer the code we wrote on the whiteboard.
 - Once students get an understanding, demo the first activity on the computer (Activity printouts are attached below and will be provided to each student).
 - Have students work on the first activity.
 - Students will get their webpage started by adding the following attributes:
 - Name (Text)
 - Hobby (Text and Image)
 - Background color of their choice
 - If some students finish earlier than others, have them help each other.

- Answer any questions students have. Demo the second activity on the computer.
- Have students work on the second activity.
 - Students will start learning how to stylize their page by using basic inline CSS functionalities. The follow attributes will be:
 - Changing text color
 - Changing the font and font size
 - Changing the image size
 - Centering the text and images
 - If some students finish earlier than others, have them help each other.
- Have students decorate their own webpage.
 - Give each students their own reference sheet to refer back to whenever they want to add more features on to their page.
 - If some students want to explore more, have them go to these links:
 - <http://www.w3schools.com/tags/default.asp>
 - <http://www.w3schools.com/css/>
- Clean up! Save their projects and send it to themselves if they have an email account to send it to.
 - Ask for volunteers to show everyone what they have created.
 - What was easy to tackle and what was more challenging to do?
 - Relate their learning to real world experience.
 - Push the chairs back to where they belong.

How will you conclude the lesson to enforce the learning objective:

I will conclude the lesson by asking students what they accomplished within the time given to work on their webpage as well as what they found to be difficult or easy. I will talk to them about how different their work is from the basic structure at beginning of the class and through practice, they are able to achieve much more. I would also explain how computer science encompasses a lot of aspects that we did not cover throughout our sessions but are available in the real world. If there is remaining time left, I would tell and show the students what I have done in college as a computer engineer to motivate them on what they can accomplish in the future.

What science process skills will this lesson exercise?

Logical thinking, problem solving, observation, prediction, experimenting

Safety precautions

None