Unit 2 - Web Development

In the Web Development unit, students are empowered to create and share the content on their own web pages. They begin by thinking about the role of the web, and how it can be used as a medium for creative expression before creating their own personal web pages. As students develop their pages and begin to see themselves as programmers, they are encouraged think critically about the impact of sharing information online and how to be more critical content consumers. They are also introduced to problem solving as it relates to programming, as they learn valuable skills such as debugging, using resources, and teamwork. At the conclusion of the unit, students work together to create a website to address a problem.

Modifications for Virtual and Socially-Distanced Classrooms

Are you teaching in a virtual setting or in a socially-distanced classroom?

Check out **this document** for ideas and resources to help you tailor common practices like *Think Pair Share* or *Peer Feedback* to your learning environment. For lesson-specific modifications, check out the Lesson Modifications section within Lesson Plans.

Chapter 1: Creating Webpages

Big Questions

- Why do people create websites?
- How can text communicate content, structure, and style on a web page?
- How do I safely and appropriately make use of the content published on the Internet?
- What strategies can I use when coding to find and fix issues?

Week 1

Lesson 1: Exploring Web Pages

Unplugged

Question of the Day: Why do people create web pages? This lesson covers the purposes that a web page might serve, both for the users and the creators. The class explores a handful of sample web pages and describes how each of those pages is useful for users and how they might also serve their creators.

Lesson 2: Intro to HTML

Web Lab

Question of the Day: How can we tell the computer both *what* to put on the web page, and *how* to organize it? This lesson introduces HTML as a solution to the problem of how to communicate both the content and structure of a website to a computer. The lesson begins with a brief unplugged activity that demonstrates the challenges of effectively communicating the structure of a web page. Then, the class looks at an HTML page in Web Lab and discusses how HTML tags help solve this problem, before using HTML to write their first web pages of the unit.

Lesson 3: Headings

Web Lab

Question of the Day: How can we work together to fix problems with our websites? This lesson continues the introduction to HTML tags, this time with headings. The class practices using heading tags to create page and section titles and learns how the different heading elements are displayed by default.

Lesson 4: Mini-Project: HTML Web Page

Web Lab | Project

Question of the Day: How can I use HTML to express a personal value? In this lesson, the class creates personal web pages on a topic of their choice. The lesson starts with a review of HTML tags. Next, the class designs web pages, first identifying the tags needed to implement them, and then creating the pages in Web Lab.

Week 2

Lesson 5: Digital Footprint

Unplugged

Question of the Day: How can you make sure that your private information stays private? This lesson takes a step back from creating websites to talk about the personal information that people choose to share digitally. The class begins by discussing what types of information they have shared on various websites, then they look at several sample social media pages to see what types of personal information could be shared intentionally or unintentionally. Finally, the class comes up with a set of guidelines to follow when putting information online.

Lesson 6: Styling Text with CSS

Web Lab

Question of the Day: How can we change the style of text on a web page? This lesson introduces CSS as a way to style elements on the page. The class learns the basic syntax for CSS rule-sets and then explores properties that impact HTML text elements. Finally, they discuss the differences between content, structure, and style when making a personal web page.

Lesson 7: Mini-Project: Your Personal Style

Web Lab | Project

Question of the Day: How can you express your personal style on a web page? In this lesson, students create their own styled web pages. The lesson starts with a review of the CSS. They then design the web page, identify which CSS properties they will need, and create their web pages in Web Lab.

Lesson 8: Intellectual Property

Question of the Day: What kind of rules protect everyone's rights when we use each other's content? Starting with a discussion of their personal opinions on how others should be allowed to use their work, the class explores the purpose and role of copyright for both creators and users of creative content. They then move on to an activity exploring the various Creative Commons licenses as a solution to the difficulties of dealing with copyright.

Week 3

Lesson 9: Using Images

Unplugged | Web Lab

Question of the Day: How can we add images on our websites, while making sure we respect everyone's rights? The class starts by considering the ethical implications of using images on websites, specifically in terms of intellectual property. They then learn how to add images to their web pages using the <img> tag and how to cite the image sources appropriately.

Lesson 10: Websites for Expression

Unplugged

Question of the Day: How can we use websites to express ourselves? This lesson introduces websites as a means of personal expression. Students first discuss the different ways that people express and share their interests and ideas, then they look at a few exemplar websites made by students from a previous course. Finally, everyone brainstorms and shares a list of topics and interests to include in a personal website, creating a resource for developing a personal website in the rest of the unit.

Lesson 11: Styling Elements with CSS

Web Lab

Question of the Day: How can we style the images and layouts of our pages? This lesson continues the introduction to CSS style properties, this time focusing more on non-text elements. The class begins by investigating and modifying the new CSS styles on a Desserts of the World page. Afterwards, everyone applies this new knowledge to their personal websites.

Lesson 12: Your Web Page - Prepare

Question of the Day: What do we need to do to prepare to build our web pages? In this lesson, students engage in the "prepare" stage of the problem-solving process by deciding what elements and style their web pages will have. They review the different HTML, CSS, and digital citizenship guidelines, then design and plan their pages, as well as download and document the images they will need. Afterwards, they reflect on how their plan will ensure that the website does what it is designed to do.

Week 4

Lesson 13: Project - Personal Web Page

Web Lab | Project

Question of the Day: What skills and practices help when we code web pages? After quickly reviewing the debugging process, the class goes online to create the pages that they have planned out in previous lessons, with the project guides as a reference. Afterwards, they engage in a structured reflection and feedback process before making any final updates.

Chapter Commentary

Students use computing as a form of self expression as they design and develop basic web pages. Focusing on the tags, keywords, and syntax used to communicate instructions to the computer, students use HTML to structure the content of a web page. They also explore the privacy and intellectual property implications of publishing their work online.

Chapter 2: Multi-page Websites

Big Questions

- How can websites be used to address problems in the world?
- What strategies can teams use to work better together?
- How do I know what information can be trusted online?

Week 5

Lesson 14: Websites for a Purpose

Question of the Day: What are the different reasons people make websites? In this lesson, students explore the different reasons people make websites. After brainstorming various reasons that they visit websites, they investigate sample web sites that have been created to address a particular problem and decide what different purposes those websites might serve for the creators. The class then thinks of problems they might want to solve with their own websites.

Lesson 15: Team Problem Solving

Question of the Day: How can we work together to make a great team? Teams work together to set group norms and brainstorm what features they would like their websites to have. The class starts by reflecting on what makes teams successful. Teams then make plans for how they will interact and achieve success in their own projects before brainstorming ideas for their website projects.

Lesson 16: Sources and Research

Question of the Day: How do we find relevant and trustworthy information on the Internet? This lesson covers how to find relevant and trustworthy information online. After viewing and discussing a video about how search engines work, students search for information relevant to their sites, then analyze the sites for credibility to decide which are appropriate to use on their own website.

Lesson 17: CSS Classes

Web Lab

Question of the Day: How can we create different styles for the same type of element? This lesson introduces CSS classes, which allow web developers to treat groups of elements they want styled differently than other elements of the same type. Students first investigate and modify classes on various pages, then create their own classes and use them to better control the appearance of their pages. Teams then reflect on how they could use this skill to improve their websites.

Week 6

Lesson 18: Planning a Multi-Page Site

Web Lab

Question of the Day: How do we plan a web page as a group? The class works in teams to plan out the final web sites and create a sketch of each page. They then download the media that they will need for their sites. At the end of the activity, they decide how the work will be distributed among them and report whether the entire team agreed to the plan.

Lesson 19: Linking Pages

Web Lab

Question of the Day: How can we combine several different web pages into one website? The class begins this lesson by looking online for the internet’s first web page and discussing how its use of links was what started the web. They then transition to Web Lab where they learn how to make their own links, as well as good conventions that make it easier for users to navigate on a page. Finally, they reflect on their team project and what their personal goals are for the final stretch.

Week 7

Lesson 20: Project - Website for a Purpose

Web Lab | Project

Question of the Day: What skills and practices will help us work together to make a great website? In this lesson, teams are finally able to code the pages that they have been planning. Using the project guide, the team works together and individually to code all of their pages, then puts all of the work together into a single site.

Lesson 21: Peer Review and Final Touches

Web Lab | Project

Question of the Day: How can we use feedback to make our websites better? This lesson focuses on the value of peer feedback. The class first reflects on what they are proud of, and what they would like feedback on. They then give and get that feedback through a structured process that includes the project rubric criteria. Afterwards, everyone puts the finishing touches on their sites and reflects on the process before a final showcase.

Chapter Commentary

Students expand their ideas of websites beyond personal expression and begin to see them as a way to solve problems. Students build on their collaborative skills and work in teams to create multi-page websites that solve a problem.

Lesson 1: Exploring Web Pages

Overview

Question of the Day: Why do people create web pages?

Every website has a purpose, a reason someone created it and others use it. In this lesson, students will start to consider the purposes a website might serve, both for the users and the creators. Students will explore some sample websites and discuss the purpose they serve for their creators. They are then asked to reflect on reasons that someone might want to create websites.

Purpose

This unit is all about the World Wide Web, with a focus on creating websites for self expression. To start students thinking about why they might want to create a website, they must begin to consider how websites are useful tools for both users and creators. The lesson opens with popular websites because students are familiar with them, but students are asked to narrow their vision to simpler sites that are within the scope of what they will be able to make in this course.

Assessment Opportunities

1. **Identify the reasons someone might visit a given website**

   On the activity guide, check that students have reasons that a user might visit each website, such as learning more about a topic or entertaining themselves.

2. **Identify the reasons someone might create a given website**

   On the activity guide, check students' reasons for why the creators would make their respective sites. Student explanations may include pragmatic reasons, such as getting feedback and advice from others, or more social reasons such as personal expression.

Agenda

Warm Up (5 minutes)
Activity (20 minutes)
- **Personal Web Pages**

Wrap Up (10 min)
- **Web Development Goals**

View on Code Studio

Objectives

Students will be able to:

- Identify the reasons someone might visit a given website
- Identify the reasons someone might create a given website

Preparation

- [ ] Print a copy of the activity guide for each student.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Exploring Web Pages** - Exemplar
- **Exploring Web Pages** - Slides

For the Students

- **Exploring Web Pages** - Activity Guide
  Make a Copy

Teaching Guide

Warm Up (5 minutes)

Journal and Discussion

Prompt: If you could say something important to the whole world, what would it be? Why is it important to you?

Allow students to share out their contributions to the group.

Remarks

> There are lots of ways that people share with the world. Today, we're going to look at how people use web pages to share what they have to say.

Question of the Day: Why do people create web pages?

Discussion Goal

The goal of the discussion is to help students see web development as a form of self-expression and communication, and to set an expectation that they have something valuable to contribute. While some students may want to share something silly, encourage students to consider that they have something valuable to say and that others can benefit from it. This discussion should set a positive atmosphere that respects the diversity of perspectives that the group can bring.

Activity (20 minutes)

Personal Web Pages

Remarks

> Most of the web pages that we visit are created by large organizations that have a lot of people working on them. But anyone can create their own personal web page and publish it to the Internet. Today, we're going to look at some personal web pages. These pages were created by a single person who had something that they wanted to share with the world.

Group: Put students in pairs.

Distribute: Pass out a copy of the activity guide to each student.

Direct students to the "Sample Web Pages" level on Code Studio.

Exploring Websites

Code Studio levels

- Levels
- **2**

Student Instructions

View on Code Studio

Sample Personal Web Pages

Sample Websites

This activity guide asks students to consider why people make personal web pages and what sorts of interests can be expressed on them.

- What is this person sharing with the world?
- Why is it important to them?

Encourage students to be as detailed as possible when brainstorming the purposes of these sites.

Share: Once everyone has had a chance to brainstorm about their sites, give students a chance to share out their thoughts.

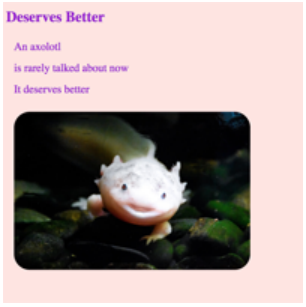
The Cutest Dog

My Trip

Musical Instruments

Recycling Club

Haikus



Discuss: Give students an opportunity to ask questions about these example sites. Make sure they understand how a small site that is primarily a tool for individual self-expression can also be a useful site for other people.

Teaching Tip

Students don't need to get it "right" for each site, but they should demonstrate that they have considered the reasons someone might make a web page. If students struggle to identify the purpose a site serves its creator, consider asking the following prompts:

- Does the website creator want the user to do something?
- Does the website try to convince the user of something in particular?
- Does the website serve as a form of personal expression for the creator?

The sites are intentionally simple, to help set expectations about the websites that students will be creating over the course of the unit.

Wrap Up (10 min)

Web Development Goals

Question of the Day: Why do people create web pages?

Journal 3-2-1:

3 - What are three topics you might be interested in creating a website about?

2 - What are two reasons you think someone might visit a website that you create?

1 - What's one thing you're most interested in learning about creating websites?

Discussion Goal

The goal of this discussion is to prepare students to think of themselves as potential website creators. As students discuss the prompt, encourage them to imagine why they might create a site similar to those in the examples, and what their motivations might be. Remind them that they will have an opportunity in this unit to create a website that will be shared with the entire world.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- **IC** - Impacts of Computing

Lesson 2: Intro to HTML

Overview

Question of the Day: How can we tell the computer both *what* to put on the web page, and *how* to organize it?

In this lesson students are introduced to HTML as a solution to the problem of how to communicate both the content and structure of a website to a computer. The lesson begins with a brief unplugged activity demonstrating the challenges of effectively communicating the structure of a web page. Students then look at an exemplar HTML page in Web Lab and discuss with their classmates how HTML tags help solve this problem. Students then write their first HTML. A wrap-up discussion helps to solidify the understanding of content vs. structure that was developed throughout the lesson.

Purpose

This lesson introduces many new concepts and tools to students. They are introduced to HTML, the Web Lab tool, and how to navigate lesson resources on Code.org in general. While the understanding of HTML as a way to communicate the structure of a web page is a critical learning objective, this lesson has students do minimal programming since there are many other new ideas and tools to grasp. In the next lesson students will have more time to spend programming in HTML.

Assessment Opportunities

1. **Explain that HTML allows a programmer to communicate the way content should be structured on a web page**

   In the final reflection prompt, students should give an explanation of how HTML is used to structure content on a page.

2. **Write a simple HTML document that uses opening and closing tags to structure content**

   Level 7 on Code Studio provides a mini-rubric to assess student use of HTML.

3. **Understand how to use lesson resources provided in Web Lab**

   As students progress through the HTML lesson, check that they are looking through the drop-down tips on the right hand side of the instructions, clicking into the map levels in the "Help and Tips" tab, and making use of the inspector tool.

Agenda

Warm Up (10 mins)

View on Code Studio

Objectives

Students will be able to:

- Explain that HTML allows a programmer to communicate the way content should be structured on a web page
- Write a simple HTML document that uses opening and closing tags to structure content
- Understand how to use lesson resources provided in Web Lab

Preparation

- [ ] Review the Code Studio levels

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Intro to HTML** - Slides
- **Exemplar Text Website** - Website

Vocabulary

- **HTML** - Hypertext Markup Language, a language used to create web pages
- **HTML Element** - A piece of a website, marked by a start tag and often closed with an end tag
- **HTML Tag** - The special set of characters that indicates the start and end of an HTML element and that element's type
- **Website Content** - the text and images on a website
- **Website Structure** - how the content of a website is organized

Introduced Code

- `<p></p>`
- `<html></html>`
- `<head></head>`
- `<!DOCTYPE>`

The Need for HTML

Activity (30 minutes)

Exploring HTML

Wrap Up (5 minutes)

Reflection

- `<body></body>`

Teaching Guide

Warm Up (10 mins)

The Need for HTML

Display: Show the image inside the **Exemplar Text Website - Website**

Prompt: Imagine you wanted to explain to a person over the phone how to draw this web page. Write down clear instructions so that what they draw would perfectly match this image.

Discuss: Once students have written their instructions, have them briefly share their instructions with a neighbor.

Demo: Run a quick demo using the instructions below.

- Pick one student to verbally share one of their instructions with you.
- The teacher should act as the person on the phone trying to draw the web page
- Publicly “draw” the website exactly as the student's instructions say. For example, if told to "Write bigger", write the word "bigger" on the page. If they don't indicate where text goes then place text in random locations.
- As the student gives you instructions have them tell you if you have drawn it correctly. If you have not drawn it correctly, have them make their directions more specific until you can draw it correctly.
- Change students after a couple of instructions to get more students involved.
- Keep track of the instructions students give and the improvements they make to the instructions somewhere visible as well.
- Repeat this process until you have recreated most of the web page.

Discuss: Once you have finished drawing the site, quickly create a list of all the different kinds of information they needed to account for in their instructions. For example, location, size, font, etc.

Teaching Tip

If this site is blocked for students, your IT department may need to whitelist codeprojects.org. This is the same site that students will use to publish their own web pages, so it's important that they have access.

Discussion Goal

Goal: Activities like this one are often used in CS courses to help highlight just how much precision is needed to communicate instructions to a computer. In this instance the goal is similar. You want to highlight the challenge of differentiating the actual content on the page and instructions indicating how it should be structured. This demonstration helps justify the creation of HTML in order to tag pieces of content to help the computer understand what they are and hence how they should look.

Remarks

> There's a lot of information that we need to communicate if we want to create web pages. It's not enough to just know what content you want to put on your page, like the actual words or images. You need to know where things should be and how they should look. Today we're going to start learning the languages used on the web to represent this additional information.

Question of the Day: How can we tell the computer both *what* to put on the web page, and *how* to organize it?

Key Vocabulary:

- **website content** - the text and images on a website
- **website structure** - how the content of a website is organized

Activity (30 minutes)

Exploring HTML

Remarks

> Today we are going to start working with a lot of resources. As we discover each type of resource, we'll add it to the list here at the front of the room, and at the end of the lesson we'll review how each is used.

Display: At the front of the room, write the heading "Resources" on the board or blank poster paper, leaving space to list the various resources as they appear in the lesson.

Teaching Tip

Using Resources: Below you can find recommendations for using the many resources students are introduced to in the lesson. Wait until after students have seen all of these resources to review at the end of the lesson, but add them to the list and model the correct usage as they appear.

- **Videos:** Watched as a class, but students can always return to them.
- **Help and Tips Tab** This tab contains all of the relevant videos and map levels for a particular level.
- **Map Levels:** Contain text and diagrams explaining content. These are intended as helpful student resources, not class readings. They are a good place to go for review after learning content or when students get stuck in levels.
- **Level Instructions:** Instructions may introduce small pieces of new content. Each level features a "Do This" section explaining what students are supposed to do in that level. Set the expectation early that reading these instructions, not just the "Do This" section, is important.
- **Level Drop-down Tips:** Students can click these tips in the instruction areas of lessons. Students should use these as a first place to check for help before talking with peers or a teacher.
- **Inspector Tool:** Highlights the code corresponding to a web page element when hovered over in the Preview Area.
- **Bubble Color:** Bubbles may turn green but there is no validation of correctness. Green only means a student clicked Continue or Finish for a level. Set the understanding early that this is more a tool for them than an indication of either completeness or correctness.

Code Studio levels

Lesson Overview 1 *(click tabs to see student view)*

Experiment with Web Lab 2 *(click tabs to see student view)*

Video: Intro to Web Lab - Part 1 3 *(click tabs to see student view)*

Explore HTML 4 *(click tabs to see student view)*

Video: Intro to Web Lab - Part 2 5 *(click tabs to see student view)*

Practice 6 *(click tabs to see student view)*

Assessment 7 *(click tabs to see student view)*

Challenge 8 *(click tabs to see student view)*

Wrap Up (5 minutes)

Reflection

Question of the Day: How can we tell the computer both *what* to put on the web page, and *how* to organize it?

Journal Prompt: In your own words, how does HTML help solve the problem of telling a computer what a web page looks like, not just what content is on it?

Discuss: After students have had time to reflect individually in the journal, allow them to discuss with a partner, then share with the class.

Remarks

> HTML uses tags to help the computer know what different pieces of content in the web page actually are. Right now we've only learned how to tell the computer that some text is a paragraph, or that part of your website is the body. We've already seen how that affects the way our web pages look and are structured. As we move forward we're going to learn more tags and see more examples of how this language helps us add structure to our webpages.

Review: Return to the list of lesson resources you wrote on the board and review as a class how they are supposed to be used. Refer to the teaching tip above for recommended uses.

Assessment Opportunity

Goal: Students' answers will vary but will likely center around the fact that using tags helps the computer know what different pieces of content "are". Using these tags helps the computer know what the tags are supposed to look like. If this discussion needs to be returned to after students have seen more tags that's fine as well. In either case, use this discussion to motivate the content vs. structure wrap-up point.

As students discuss HTML as a solution, make sure that they are using the key vocabulary of the lesson:

- **website content** - the text and images on a website
- **website structure** - how the content of a website is organized
- **HTML** - Hypertext Markup Language, a language used to create web pages
- **HTML Element** - A piece of a website, marked by a start tag and often closed with an end tag
- **HTML Tag** - The special set of characters that indicates the start and end of an HTML element and that element's type

The content is the literal words that are being typed on the page. Using HTML, students are providing structure to the page, explaining how those pieces of content should be interpreted. Later in the unit students will learn CSS, a language that allows them to individually style elements. For now, however, the styles being applied based on their HTML tags are just the default styles of their web browser. Students don't need to fully understand this difference at this point, as it will be much clearer once they learn CSS later in the unit.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- ▶ **AP** - Algorithms & Programming

Lesson 3: Headings

Overview

Question of the Day: How can we work together to fix problems with our websites?

In this lesson, students continue to use HTML to structure text on web pages, this time in pairs, with a focus on working together and debugging problems with their sites. Students learn how the different heading elements are displayed by default and practice using them to create page and section titles.

Purpose

This lesson introduces the core practices of pair programming and debugging. These will be used throughout the unit and align with authentic practices used by industry professionals. It also covers the heading tags that students will use in their pages for the rest of the unit and reinforces the general structure of HTML (opening tag / content / closing tag).

Assessment Opportunities

1. **Use heading tags to change the appearance of text on a web page.**

   See the multiple choice question on Level 8 and the rubric on Level 9.

2. **Structure content into headings, subheadings, and paragraphs.**

   See the rubric on Level 9.

3. **Use a structured practice to collaboratively create a digital artifact.**

   As students move through the lesson, ensure that that are following the guidelines for pair programming as described in the video. In the wrap up journal prompt, check that student responses describe effective collaboration.

Agenda

Warm Up (10 minutes)

- **Tags Poster**

Activity (45 minutes)

- **Pair Programming**
- **Web Lab: Headings**

Wrap Up (5 minutes)

- **Journal**

View on Code Studio

Objectives

Students will be able to:

- Use heading tags to change the appearance of text on a web page.
- Structure content into headings, subheadings, and paragraphs.
- Use a structured practice to collaboratively create a digital artifact.

Preparation

- [ ] Have student journals ready to give back.
- [ ] If you want to use an anchor chart, prepare poster paper to do so as a whole class.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Headings** - Slides

Vocabulary

- **Heading** - A title or summary for a document or section of a document.

Introduced Code

- `<h1></h1> <h2></h2>`

Teaching Guide

Warm Up (10 minutes)

Tags Poster

Journal: Have students make a T-chart on a blank page in their journals and label the top "HTML Tags"

Prompt: Yesterday, you learned about HTML, the language of the World Wide Web. HTML uses tags to structure content on web pages. In your groups, think of as many tags as you remember and what they do.

Give students a few minutes to think of as many tags as they can.

Remarks

> Now that you've had some time to think of your own, share your lists with a partner and see whether there's anything else that you can add.

Discuss: Pairs should discuss with one another and record their ideas in their journals. Afterward, share across the room and add the different tags to a poster or anchor chart, if you choose to make one. As you go through the tags, highlight how working together allowed the students to make their lists more comprehensive.

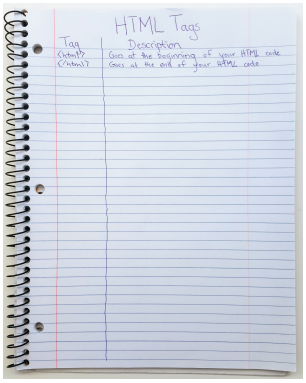
Remarks

> Usually we are able to solve problems better when we work with someone else. That's true in programming our web sites, too. Today, we're going to look at some ways that we can work together to solve different problems that our websites might have.

Question of the Day: How can we work together to fix problems with our websites?

Teaching Tip

Anchor Chart / Poster: Throughout this unit students will be keeping track of the tags they learn. This warm-up prompts students to record the HTML tags that they learn by writing them in their journals. If you wish, you can also keep track of the same information on a shared class poster or anchor chart that you update after each lesson. Prompts throughout the unit will tell you when students should update their journals, and updating the anchor chart may provide reinforcement of that process.



Discussion Goal

Goal: The goal of this discussion is to review the tags that students saw in the previous lesson.

- `<!DOCTYPE html>` - Tells the computer that this is a document written in HTML
- `<html>` - Indicates the beginning of your code written in HTML
- `<head>` - Contains information (sometimes called "metadata") about your web page
- `<body>` - Contains all the main content of your web page
- `<p>` - Defines a paragraph

Activity (45 minutes)

Pair Programming

Group: Put students into pairs.

Remarks

> We're going to be working on Web Lab again today, but this time we'll be using **pair programming**. Pair programming helps people make better programs by working together, but there are some rules we have to follow to make sure it goes well.

Display: Show the Pair Programming video.

Teaching Tip

Pair Programming: Pair programming is practiced in education and in industry. Students who pair program are more confident in their abilities and are more likely to continue to study computer science. This practice is most effective if it is introduced early and the rules for switching partners are enforced by the teacher. You can read more about Pair Programming in the Curriculum Guide linked in the CS Discoveries curriculum page at **https://curriculum.code.org/csd**.

Code Studio levels

- Levels
- 2

Review: Ensure that students understand the rules for pair programming:

- There is only one computer.
- The driver is the only one to touch the keyboard/mouse.
- The navigator should look for problems in the code and keep track of the high-level plan.
- Both driver and navigator should be communicating constantly.
- Driver and navigator must switch when the teacher indicates, typically every few minutes.

Teaching Tip

Some classes may need more support in communicating and collaborating effectively. If appropriate, consider having your students brainstorm a list of "sentence stems" that they can use for respectful and effective communication before they break into pairs ("Have you considered..." "What about..." "I think the problem might be..."). As students move through the lesson, remind them that their main goal today is to learn how to work together on a web page, which is even more important than the heading tag!

Web Lab: Headings

Transition: Have pairs go to Code Studio and both log in using the "Pair Programming" feature.

Prompt: Remind students to switch driver and navigator every three minutes. You may want to project a digital timer at the front of the room.

Code Studio levels

Lesson Overview 1 *(click tabs to see student view)*

Video: Pair Programming *(click tabs to see student view)*

Skill Building 3 4 5 *(click tabs to see student view)*

Quick Check 6 *(click tabs to see student view)*

Video: Debugging 7 *(click tabs to see student view)*

HTML Headings 8 8a 8b 8c 8d

Assessment 9 *(click tabs to see student view)*

HTML Headings 10 10a 10b 10c 10d 10e 10f

Wrap Up (5 minutes)

Journal

Question of the Day: How can we work together to fix problems with our websites?

Prompt: Have students update their "HTML Tags" log with the heading tags they learned in this lesson.

Key Vocabulary:

- **heading** - a title or summary for a document or section of a document

Prompt: Today, you learned a lot about debugging, which is an important skill for programmers. What is one way working with a partner helped you to debug today?

Assessment Opportunity

Check that students are describing effective forms of collaboration.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- **AP** - Algorithms & Programming

Lesson 4: Mini-Project: HTML Web Page

Overview

Question of the Day: How can I use HTML to express a personal value?

In this optional mini-project, students use what they have learned to create their own personal web page on a topic of their choice. The lesson starts with a review of the HTML that students have learned. They then begin their project by designing a web page and identifying which tags they will use to implement it. They then create their web pages in Web Lab and share with the class. Optionally, after engaging in a formal feedback process, they may make final changes to their websites before reflecting on their process. This project can be completed in one day or expanded over several days, depending on the scheduling needs of the class.

Purpose

This project allows students more time to practice the content that they have already learned. It is intentionally open-ended and flexible to allow classes to spend one or several days, depending on the pacing needs of the students or the school calendar.

Agenda

Warm Up

- **Journal**

Activity

- **Step 1: Define - State your Goal**
- **Step 2: Prepare - Design your Page**
- **Step 3: Try - Develop your Page**
- **Step 4: Reflect**
- **Peer Feeedback**

Wrap Up

- **Journal**

View on Code Studio

Preparation

- [ ] Print out a copy of the project guide for each student.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Project Guide - HTML Project** - Exemplar
- **Peer Review - HTML Web Page** - Exemplar
- **HTML Web Page** - Slides

For the Students

- **HTML Web Page** - Rubric Make a Copy
- **HTML Web Page** - Peer Review Make a Copy
- **HTML Web Page** - Project Guide Make a Copy

Teaching Guide

Warm Up

Journal

Prompt: What is one personal value you would like to share with the world?

Allow volunteers to share out personal values that they think are important.

Remarks

> We all have things that are important to us. Websites allow us to share those things with the entire world. Today, we are going to work on using what we have learned about HTML to share out something that we think is important.

Question of the Day: How can I use HTML to express a personal value?

Discussion Goal

This discussion allows students to share ideas for their websites, but it is not necessary for everyone to share if they prefer not to. The goal of the discussion is to start students thinking about the topic and encourage them to think of websites as a way to express themselves.

Activity

Distribute: Give each student a copy of the Project Guide.

Step 1: Define - State your Goal

Students will already have stated a personal value in the warm-up, but this is a chance for them to refine what they want to say, or even change their minds about their website topic.

Step 2: Prepare - Design your Page

As students answer questions about the design of the page, ensure that they are differentiating between the content of the page and the way that content is organized or structured. After they have completed their designs, ensure that they can identify which tags will be needed for different text on the web pages.

Step 3: Try - Develop your Page

After you have checked the designs, allow students to log into Code Studio and code their pages. They will have a chance to review all of the tags they have learned before they start on their web pages. They can complete these activities as a review or use them as resources while they work on their projects.

Code Studio levels

Lesson Overview 1 *(click tabs to see student view)*

HTML Review 2 | 2a | 2b | 2c | 2d | 2e | 2f

HTML Lists 3 | 3a | 3b

Code Your Page 4 *(click tabs to see student view)*

Review Your Page

5 *(click tabs to see student view)*

Step 4: Reflect

Students should have a chance to think about what they liked best about their pages. You may also want to allow students to formally or informally present their work to the rest of the class.

Peer Feeedback

As part of this project, you may give students the opportunity to give feedback to their peers using the Peer Review form. This will likely extend the project by at least one day.

Wrap Up

Question of the Day: How can I use HTML to express a personal value?

Journal

Prompt: What's one thing that would make your web page better that you don't know how to do yet?

As students share out their ideas, put them on the board or a poster, and try to call out any skills that they will be learning in the next few lessons.

Discussion Goal

Use this share out to get students excited about the things that they will learn in upcoming lessons. If you create a poster, you may also want to cross off topics as you teach them. For topics that are not covered in the curriculum, you can point students to similar topics that are covered or, if appropriate, direct them to outside resources that will guide them in learning those skills.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- **AP** - Algorithms & Programming

Lesson 5: Digital Footprint

Overview

Question of the Day: How can you make sure that your private information stays private?

This lesson takes a step back from students' work developing web pages to help them articulate what personal information they choose to share digitally and with whom. It also reinforces the notion that much of the information that they choose to share digitally falls largely out of their control the moment it is released.

Students look at several social media pages to determine what sorts of information people are sharing about themselves or one another. Last, students reflect on what guidelines they think are appropriate for posting information online.

The ultimate point of this lesson is not to scare students, but rather to experientially bring students to realize that they don't have control over information released online.

Purpose

Now that students are beginning to share information publicly, it's crucial that they are instilled with an understanding of the potential consequences of sharing personal information online.

In this lesson students look through several example social media profiles for fake students. Individually these pages contain relatively innocuous information, but when students cross reference information across multiple profiles they see how a detailed picture (or digital footprint) can start to form. Through this activity students see that even information that they may not see as private on its own can share more information than intended when combined with other small details.

Assessment Opportunities

1. **Understand and explain reasons that it is difficult to control who sees information published online.**

   In page 2 the Social Sleuth activity guide, look at students' explanations of how information was accidentally shared.

2. **Understand and justify guidelines for safely publishing information online.**

   Review students' checklists in the lesson wrap up.

Agenda

Warm Up (10 min)

Your Digital Footprint

View on Code Studio

Objectives

Students will be able to:

- Understand and explain reasons that it is difficult to control who sees information published online.
- Understand and justify guidelines for safely publishing information online.

Preparation

- [ ] Print out copies of "Social Sleuth" for each student (or one for each group if grouping)

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Digital Footprint** - Slides
- **Social Sleuth** - Exemplar

For the Students

- **Social Sleuth** - Activity Guide
  Make a Copy

Vocabulary

- **Digital Footprint** - The collected information about an individual across multiple websites on the Internet.

Activity (30 min)

Investigating Social Profiles

Wrap Up (5 minutes)

Shaping Your Digital Footprint

Teaching Guide

Warm Up (10 min)

Your Digital Footprint

Prompt: Ask the students to consider what websites they have given personal information to. In small groups, ask students to come up with a list of websites that they have accounts on (even if they use sign-in with Facebook, Google, or similar) and what kind of information they think these websites might have about them.

Discuss: Have students silently brainstorm or journal, then share with a partner, and finally share as a full class. Create a comprehensive list of all of the websites that may have their personal information.

Remarks

> There's a lot of information that we put on the internet, whether we mean to do it or not. While we might be okay with some of that information being online, there are other things that we would like to keep private. All of the information about us that can be found on the Internet is known as our digital footprint. We want to be careful about what information is included in that digital footprint.

Key Vocabulary:

- **Digital Footprint** - The collected information about an individual across multiple websites on the Internet.

Discussion Goal

Goal: This discussion is not about coming up with a comprehensive list of personal information students may have shared with websites, nor is it to frighten them out of sharing information. The goal is for students to start thinking more critically about when and where they share information about themselves.

This will prime them for the main activity of the day, looking at specific pieces of information and audiences to consider when their privacy matters, and whether they are unknowingly giving up their privacy.

If students are having trouble thinking of information, you may want to follow up with some more specific prompts:

- What information do you know you've given to a website (eg. your email address)
- What information might you have unknowingly given to a website (eg. a picture with your home address)
- What information might other people have shared about you without your knowledge or permission (eg. tagging you on Facebook)

Question of the Day: How can you make sure that your private information stays private?

Activity (30 min)

Investigating Social Profiles

Goal: Explore how small pieces of personal information, spread across multiple sites on the Internet, can produce a fairly detailed picture of a person, known as a digital footprint.

Group: This activity can be done individually, but is better when students are in groups of 2-3

Distribute: Activity guide to "Social Sleuth"

Transition: Send students to Code Studio.

Code Studio levels

Lesson Overview 1 *(click tabs to see student view)*

Social Sleuth 2 *(click tabs to see student view)*

Wrap Up (5 minutes)

Shaping Your Digital Footprint

Question of the Day: How can you make sure that your private information stays private?

Remarks

> The activity today focused on how social media websites contribute to a digital footprint. As we prepare to publish our first web pages, you'll need to think about how those contribute to your digital footprint.

Prompt: With your elbow partner, come up with a checklist that you can use to determine what should, and shouldn't, be posted online.

Share: Allow groups to share out their checklists, using the responses to develop a class-wide web publishing checklist. Consider making a poster of your class-wide checklist that you can refer back to throughout the unit.

Assessment Opportunity

Goal: Use this discussion to create a lasting checklist of best practices for when publishing information online. Possible checks include:

- Could someone identify me with this information?: for example name, address, phone number, etc.
- Do I want everyone to see this?: Don't publish anything you don't want to possibly be published to the world.
- Do I want this to be permanent?: You lose control of information once it's published and it could be around for your entire life.

Students' lists may be different but should cover these principles and additional ones they saw in today's lesson.

Ensure that students are using the lesson's key vocabulary:

digital footprint - the collected information about an individual across multiple websites on the Internet

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- **IC** - Impacts of Computing
- **NI** - Networks & the Internet

Lesson 6: Styling Text with CSS

Overview

Question of the Day: How can we change the style of text on a web page?

This lesson introduces CSS as a way to style elements on the page. Students learn the basic syntax for CSS rule-sets and then explore properties that impact HTML text elements. They work on a HTML page about Guinness World Record holders, adding their own style to the provided page.

Purpose

This lesson introduces students to a new language (CSS), and to the idea that different computer languages have different functions and syntax. While only a few CSS properties are introduced in the core lesson, students are encouraged to use the optional activities at the end of the lesson to explore more ways that they can express themselves using CSS.

Assessment Opportunities

1. **Use CSS selectors to style HTML text elements.**

   See Level 10 in Code Studio.

2. **Link to an external style sheet.**

   See Level 10 in Code Studio.

3. **Explain the differences between HTML and CSS in both use and syntax.**

   See the review at the main activity. You may also want to collect a T-chart from each group.

Agenda

Warm Up (5 minutes)

Journal: HTML Appearance

Activity (40 minutes)

Web Lab: Introduction to CSS

Wrap Up (10 minutes)

Recording CSS Properties

View on Code Studio

Objectives

Students will be able to:

- Use CSS selectors to style HTML text elements.
- Link to an external style sheet.
- Explain the differences between HTML and CSS in both use and syntax.

Preparation

- [ ] Create a new poster titled **CSS Properties** if your students will not be tracking new CSS properties in their journals

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Styling Text with CSS** - Slides

Vocabulary

- **CSS** - Cascading Style Sheets; a language used to describe how HTML elements should be styled
- **CSS Selector** - the part of a CSS rule-set that defines which HTML elements the style should be applied to

Introduced Code

- `text-decoration: value`
- `text-align: value`
- `font-size: value`
- `font-family: value`
- `color: value`

Teaching Guide

Warm Up (5 minutes)

Journal: HTML Appearance

Display: Send students to the sample web page in Code Studio or display it on the board.

Code Studio levels

- Levels
- **2**

Prompt: Check out the web page on Code Studio. If you wanted to create a page like this, what do you already know how to do? What do you still need to learn how to do?

Discuss: Have students share which parts they know and don't know

Discussion Goal

Goal: Students should notice that they can get the structure and size of the text right using headings (e.g. `<h1>`) and paragraphs `<p>`. They may notice that they cannot change the color of the text. Some other styles to notice are that all the paragraphs are in italics, the speech names are underlined, and the citations are much smaller than the paragraphs.

Remarks

> So far we have only made web pages where we control the content and structure, such as which parts of the pages are headings or paragraphs. We've been using HTML as the language to specify the content and structure of the pages. While HTML allows us some control over how the page looks, it doesn't give developers much control over the specific look and style of each element. To do that, we need a language to express *style*.

Question of the Day: How can we change the style of text on a web page?

Activity (40 minutes)

Web Lab: Introduction to CSS

Group: Put students in pairs.

Transition: Send students to Code Studio.

Allow students to explore the sample web page in Code Studio.

Code Studio levels

- Levels

Display: Watch and discuss the CSS video as a class.

Code Studio levels

- Levels
- **3**

Circulate: Support students as they continue through the lesson progression.

Code Studio levels

Lesson Overview 1 ***(click tabs to see student view)***

Sample Website *(click tabs to see student view)*

Exploration *(click tabs to see student view)*

Video: Intro to CSS - Part 1 4 *(click tabs to see student view)*

Skill Building 5 6 7 *(click tabs to see student view)*

Video: Intro to CSS - Part 2 8 *(click tabs to see student view)*

Skill Building 9 *(click tabs to see student view)*

Styling Text with CSS 10 10a 10b 10c 10d 10e 10f 10g

Assessment 11 *(click tabs to see student view)*

Challenges and Extra Code 12 12a 12b 12c 12d 12e 12f

Review: Briefly review the "Content-Structure-Style" paradigm found in the "Help and Tips" area of the Code Studio levels. Draw a T-chart on the board and label one side HTML and one side CSS. Have students work in small groups to think of as many differences they can between the two languages, then come back together as a group and share.

Assessment Opportunity

Make sure students are distinguishing between how HTML indicates the structure of a document and how CSS allows students to set the styles, as well as the differences in how the languages look on the screen and where they are used.

Wrap Up (10 minutes)

Recording CSS Properties

Question of the Day: How can we change the style of text on a web page?

Set Up: Have students create a new page in their journals called CSS Properties.

Group: Place students in groups of two to five - you'll need at least one group for each of the properties introduced in this lesson.

Teaching Tip

Journal or Poster? Just as with the "HTML Tags" page in their journals, you may choose to have your class keep track of CSS Properties in a shared class poster.

Jigsaw: Assign each group one of the properties introduced today. Each group needs to come up with a description and example for their property.

Key Vocabulary:

- **CSS** - Cascading Style Sheets; a language used to describe how HTML elements should be styled
- **CSS Selector** - the part of a CSS rule-set that defines which HTML elements the style should be applied to

Share: Have groups add their properties to their journals or to the class "CSS Properties" poster.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- **AP** - Algorithms & Programming

Lesson 7: Mini-Project: Your Personal Style

Overview

How can you express your personal style on a web page?

In this optional mini-project, students use what they have learned to create their own styled web page on a topic of their choice. The lesson starts with a review of the CSS that students have learned. They then begin their project by designing a web page and identifying which properties they will use to implement it. They create their web pages in Web Lab and share with the class. After engaging in a formal feedback process, they make final changes to their websites before reflecting on their process. This project can be completed in one day or expanded over several days, depending on the scheduling needs of the class.

Purpose

This project gives students more time to practice the content that they have already learned. It is intentionally open-ended and flexible to allow classes to spend one or several days, depending on the pacing needs of the students or the school calendar.

Agenda

Warm Up

- **Journal**

Activity

- **Step 1: Define - State your Goal**
- **Step 2: Prepare - Design your Page**
- **Step 3: Try - Develop your Page**
- **Step 4: Reflect**
- **Peer Feedback**

Wrap Up

- **Journal**

View on Code Studio

Preparation

- [ ] Print a copy of the project guide for each student.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Project Guide - Your Personal Style** - Exemplar
- **Peer Review - Your Personal Style** - Exemplar
- **Your Personal Style** - Slides

For the Students

- **Your Personal Style** - Rubric
  Make a Copy
- **Your Personal Style** - Peer Review
  Make a Copy
- **Your Personal Style** - Project Guide
  Make a Copy

Teaching Guide

Warm Up

Journal

Prompt: What is special about your personal style that you would like to share with the world?

Allow volunteers to share out aspects of their personal style that they think are important.

Remarks

> Websites allow us to share our style in creative ways. Today, we are going to work on using what we have learned about CSS to share our style with the world.

Discussion Goal

This discussion allows students to share ideas for their websites, but it is not necessary for everyone to share if they prefer not to. The goal of the discussion is to start students thinking about the topic and encourage them to think of websites as a way to express themselves.

Question of the Day: How can you express your personal style on a web page?

Activity

Distribute: Give each student a copy of the Project Guide.

Step 1: Define - State your Goal

Students will already have described personal style in the warm-up, but this is a chance for them to refine what they want to say, or even change their minds about their website style.

Step 2: Prepare - Design your Page

As students answer questions about the design of the page, ensure that they are differentiating between the content of the page and the way that content is styled. After they have completed their designs, ensure that they can identify which CSS properties will be needed for different text on the web pages.

Step 3: Try - Develop your Page

After you have checked the designs, allow students to log into code studio and code their pages. They will have a chance to review all of the tags they have learned before they start on their web pages. They can complete these activities as a review or use them as resources while they work on their projects.

Code Studio levels

Lesson Overview 1 ***(click tabs to see student view)***

CSS Review 2 | 2a | 2b | 2c | 2d | 2e

RGB Colors 3 | 3a | 3b

Add Content and Structure to Your Page 4

(click tabs to see student view)

Add Style to Your Page

5 *(click tabs to see student view)*

Review Your Page

6 *(click tabs to see student view)*

Step 4: Reflect

Students should have a chance to think about what they liked best about their pages. You may also want to allow students to formally or informally present their work to the rest of the class.

Peer Feedback

As part of this project, you may give students the opportunity to give feedback to their peers using the Peer Review form. This will likely extend the project by at least one day.

Wrap Up

Journal

How can you express your personal style on a web page?

Prompt: What's one thing that would make your web page better that you don't know how to do yet?

As students share out their ideas, put them on the board or a poster, and try to call out any skills that they will be learning in the next few lessons.

Discussion Goal

Use this share out to get students excited about the things that they will learn in upcoming lessons. If you create a poster, you may also want to cross off topics as you teach them. For topics that are not covered in the curriculum, you can point students to similar topics that are covered or, if appropriate, direct them to outside resources that will guide them in learning those skills.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- ▶ **AP** - Algorithms & Programming

Lesson 8: Intellectual Property

Overview

Question of the Day: What kind of rules protect everyone's rights when we use each other's content?

Starting with a discussion of their personal opinions on how others should be allowed to use their work, the class explores the purpose and role of copyright for both creators and users of creative content. They then move on to an activity exploring the various Creative Commons licenses as a solution to the difficulty in dealing with copyright.

Purpose

Until this point the only content that students have used on their web pages is their own, but in the next lesson they will be adding images to their sites. Before they do so, they need to understand the rules governing how to legally use content they find on the web. We use the Creative Commons license as a clearer alternative to the more restrictive standard copyright and guide students through searching for, using, and properly citing Creative Commons licensed media.

Assessment Opportunities

1. **Explain the purpose of copyright.**

   In the wrap up journal prompt, check that students are thinking of reasons that people may want their intellectual property covered under copyright law.

2. **Identify the rights and restrictions granted by various Creative Commons licenses**

   In the activity guide, check that students are choosing licenses and providing explanations consistent with the given scenarios.

Agenda

Warm Up (10 Minutes)
- **Use of Your Work**

Activity (20 minutes)
- **The Creative Commons Solution**

Wrap Up (10 mins)
- **Your Own CC License**

View on Code Studio

Objectives

Students will be able to:

- Explain the purpose of copyright.
- Identify the rights and restrictions granted by various Creative Commons licenses.

Preparation

- [ ] Preview Creative Commons Overview - Video. You may need to download it before school if YouTube is blocked.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Licensing Your Work** - Exemplar
- **Intellectual Property** - Slides

For the Students

- **Licensing Your Work** - Activity Guide Make a Copy
- **Creative Commons Overview** - Video

Vocabulary

- **Copyright** - the exclusive legal right to print, publish, perform, film, or record literary, artistic, or musical material, and to authorize others to do the same

Teaching Guide

Warm Up (10 Minutes)

Use of Your Work

Remarks

> All of you have been working hard to create a new website that you're going to publish to the world. When you publish something, though, it can be hard to control what other people do with it. Sometimes people use our work in ways that don't seem fair to us. I'm going to describe a few situations for you. If you think what happened was fair, stand up. If you think it was unfair, sit down.

Teaching Tip

These prompts aim to relate broader questions of copyright to students' own experiences creating and sharing content online. To make this hit close to home you may want to change the prompts to pick particular forms of social media that students are interested in. If you know students don't use a lot of social media, then alter the prompt to reflect another area where your students might think their own creative work was used inappropriately.

1. You take an awesome picture and someone puts it on their social media account with your name beside it.
2. You write a story and someone else publishes it and says that they wrote it.
3. You write a song and someone sings it to her friends.
4. You write a song and someone sings it at a concert and makes a lot of money.
5. You take a picture and someone else Photoshops it and puts the new version on his web site.

Prompt: What rules would you make for people who want to use your creative work?

Discuss: Have students journal individually, then share with a neighbor, and finally discuss as a whole class.

Discussion Goal

This discussion serves to get students thinking about the problem before introducing them to the Creative Commons solution. As students discuss the rules that they would like for their own work, make sure to emphasize and highlight the principles that correspond to the Creative Commons properties that they will explore later in the lesson.

Remarks

> It's okay if not everyone agrees how they want their work to be used. Copyright law says that whoever creates new content, such as a picture, a story, or a song, gets to decide how other people are allowed to use it.

Key Vocabulary:

- **copyright** - the exclusive legal right to print, publish, perform, film, or record literary, artistic, or musical material, and to authorize others to do the same

Question of the Day: What kind of rules protect everyone's rights when we use each other's content?

Activity (20 minutes)

The Creative Commons Solution

Remarks

> Copyright is granted the moment something is created, so unless explicitly told otherwise, we have to assume any picture, video, or other media we find online is fully covered by copyright law, which means that no one else can make copies or post it online without permission.
>
> Sometimes, though, we want people to share our work so that more people can see it. The Creative Commons (CC) license was developed to help content creators have more specific control over how other people can use their work.

Display: Present the video to the class. This video is from the McLaughlin Library at the University of Guelph.

Group: Pair students.

Distribute: Give each student a copy of the activity guide.

Licensing Your Work

License Components

The first portion of this activity guide covers the components of a Creative Commons license. Push students to think critically here about both the value each component adds to the creator, but also the ways it might limit the cultural exchange of ideas, connecting the components of the license to the scenarios that they considered earlier in the class.

Other Options

The second part of the guide introduces students to other licenses and scenarios that they will likely encounter as they search for images.

Choosing the Right License

The second page of this activity provides students with four CC licenses and two content creator scenarios. For each scenario, students are asked to evaluate which of the four provided licenses is the *least restrictive* but still addresses the concerns and needs of the content creator.

Discuss: Ask several students to share out their responses to the *Choosing the Right License* scenarios. Encourage discussion and debate if students identified different licenses for the same scenarios.

Image Hunt

The last portion of the guide prompts students to find images of their choosing and identify the licenses under which they were published.

Teaching Tip

As students go through the guide, the goal is not for them to memorize all aspects of the various licenses, but to have an understanding that creators can choose how their work is to be used by other people. This activity should prepare them to legally and responsibly use images that they find on the web in their own web sites.

Content Corner

Students may also be curious about how to attribute pictures that they take themselves. You can remind them that as the content creators, they can **choose** the license that they want to use, and list themselves as the creator along with their chosen license.

Discussion Goal

Goal: While there may not be a specific "right" license for each of these scenarios, encourage students to always consider whether the license they chose is more restrictive than it strictly needs to be. One of the design goals of the Creative Commons license is to increase the amount of creative material available to the general public, promoting the sharing of intellectual property for the common good. With this in mind, we should only be adding the minimal restrictions needed to meet the content creator's wishes.

Because we can't know which sites might be blocked in your district, we've avoided pointing students to a specific search engine. Not all search engines make it easy to set Creative Commons filters - some of the easiest include:

- Creative Commons Search
- Google Image Advanced Search
- Wikimedia Commons
- Flickr Creative Commons

As with any site with crowdsourced content, search engine results will change from day to day, and some of those results may be inappropriate for the classroom. You may want to check these sites shortly before displaying them to the class, and decide what is best for your classroom.

Share: Allow students to share the images and licenses that they have found, whether the images could be included on a student web site, and if so, what rules the student would need to follow to use the image.

Wrap Up (10 mins)

Your Own CC License

Question of the Day: What kind of rules protect everyone's rights when we use each other's content?

Key Vocabulary:

- **copyright** - the exclusive legal right to print, publish, perform, film, or record literary, artistic, or musical material, and to authorize others to do the same

Journal: Think about some of the photos, drawings, and written work that you have created in the past, or even the web site that you will create in this class. Without a clear license, all of those things are covered under the fully restrictive copyright. Which Creative Commons license would you rather use (if any) and why?

- Check out the **Creative Commons license chooser**

Assessment Opportunity

As students discuss the advantages and disadvantages of various types of licenses, make sure that they recognize that copyright is intended to protect the rights of content creators, such as themselves. These rights include being recognized as the creator when the work is displayed, or deciding who can use and make money off the work.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- **AP** - Algorithms & Programming
- **IC** - Impacts of Computing

Lesson 9: Using Images

Overview

Question of the Day: How can we add images on our websites, while making sure we respect everyone's rights?

Students start the class by considering the ethical implications of using images on their websites, specifically in terms of intellectual property. They then learn how to add images to their web pages using the <img> tag and how to cite the image sources appropriately.

Purpose

This lesson introduces images, which are different from earlier tags in that they are 'self-closing' and include attributes. Students should understand that these tags do not surround content in the same way as other tags.

This is also the first time that students are encouraged to use content from others, and provides them an opportunity to put into practice what they have learned about intellectual property and copyright.

Assessment Opportunities

1. **Follow copyright law, accurately attributing others when using their work.**

   See Level 8 in the Code Studio lesson.

2. **Add an image to a web page**

   See Level 8 in the Code Studio lesson.

Agenda

Warm Up (10 min)
- **Using Images**

Activity (20 min)
- **Adding Images**

Wrap Up (5 min)
- **Using Images**

View on Code Studio

Objectives

Students will be able to:

- Follow copyright law, accurately attributing others when using their work.
- Add an image to a web page.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Using Images** - Slides

Introduced Code

- `<img >`

Teaching Guide

Warm Up (10 min)

Using Images

Remarks

> Today, we're going to add some images to our sites. This can make the websites a lot more fun, but it also means we'll need to be extra careful about making sure that we are safe and responsible in how we use them.

Prompt: In your journal, think of some guidelines we should keep in mind when using images. How can we make sure that we are safe and respecting the rights of others?

Discuss: Have students journal individually, then share with a neighbor, and finally discuss as a whole class. You may choose to create a poster with the guidelines that students have created, and prompt them if anything seems missing from the list.

Discussion Goal

As students come up with their guidelines, you may choose to prompt them by reminding them of the recent activities they have done around sharing personal information and respecting copyright. Many classes may also want to add in other guidelines, such as defining what is appropriate in a school setting, or making sure that any people depicted in the image are comfortable with the image being posted online. Regardless, make sure that you are satisfied that the guidelines are sufficient before you move on.

Question of the Day: How can we add images on our websites, while making sure we respect everyone's rights?

Activity (20 min)

Adding Images

Transition: Send students to Code Studio.

Content Corner

As students start to use images, they may have trouble finding the right size to fit their pages. In the two lessons, students will learn how to resize their images with CSS. For now, students can use an online image resizer, such as the one found at **https://resizeimage.net/**, to resize their images. Alternatively, they can use the `height` or `width` attribute inside the `img` tag to resize it as the page loads.

Code Studio levels

Lesson Overview 1 *(click tabs to see student view)*

Skill Building 2 3 4 5 6 *(click tabs to see student view)*

Adding Images 7 7a 7b 7c 7d 7e 7f 7g

Assessment 8 *(click tabs to see student view)*

Adding Images 9 9a 9b 9c 9d

Wrap Up (5 min)

Using Images

Question of the Day: How can we add images on our websites, while making sure we respect everyone's rights?

Journal 3-2-1:

- What are **3** ways you can use images to make your site better?
- What are **2** challenges in adding images to a website?
- What is **1** way you can respect people's rights when using images?

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- ▶ **AP** - Algorithms & Programming
- ▶ **IC** - Impacts of Computing

Lesson 10: Websites for Expression

Overview

Question of the Day: How can we use websites to express ourselves?

In this lesson students investigate ways to use websites as a means of personal expression and develop a list of topics and interests that they would want to include on a personal website. Students begin by brainstorming different ways that people express and share their interests and ideas. Students then look at a few exemplar websites to identify ways they express ideas. Finally, students brainstorm and share a list of topics and interests they might want to include on a personal website; they will reference this list as they progress through the unit.

Purpose

This lesson emphasizes that web development, and by extension computer science, is an avenue for self expression. The warm up situates web development as another means of self-expression alongside visual art, dance, music, fashion, social media, and many other ways students are likely already expressing themselves. Seeing student exemplars helps scope students' expectations for their own pages. The activity situates web development within the Problem Solving Process framework, and brainstorming content for their website provides students an opportunity to define the ways that they would like to express themselves through their pages.

Assessment Opportunities

1. **Identify websites as a form of personal expression**

   In the activity guide and discussion, check that students have clearly explained the purpose of their own web pages and why that purpose is personally relevant to them.

Agenda

Warm Up (5 mins)

Express Yourself

Activity (20 mins)

Problem-Solving Process Review

Wrap Up (5 mins)

Journal 3-2-1

View on Code Studio

Objectives

Students will be able to:

- Identify websites as a form of personal expression.

Preparation

- [ ] Prepare journals or optionally print copies of the activity guide

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Define Your Webpage** - Exemplar
- **Websites for Expression** - Slides

For the Students

- **Define Your Web Page** - Activity Guide

Make a Copy

Teaching Guide

Warm Up (5 mins)

Express Yourself

Prompt: What are the ways that you or your friends express yourselves? Think about different ways of communicating, activities, or spaces that you consider a form of self-expression.

Discuss: Students should brainstorm ideas independently, then share with a neighbor, and finally share with the whole class.

Discussion Goal

Goal: This warm-up should generate a list of ways students express their ideas. If they need help getting started, offer them a couple of examples from the list below. The goal of this warm-up is to frame web development as another form of self-expression.

Remarks

> We share our thoughts, feelings, and ideas in many different ways. Some people might express their thoughts online, others might do so through the way they dress, by making a song, or by drawing a picture. Self-expression is an important part of our lives, and as we're going to see, making websites is another way we can express our ideas, interests, and feelings.

Question of the Day: How can we use websites to express ourselves?

Activity (20 mins)

Problem-Solving Process Review

Review: Review the problem-solving process framework: Define, Prepare, Try, Reflect

Remarks

> Although we don't usually think about self-expression as a "problem" that we need to solve, we can use the problem-solving process to help us express ourselves with our web pages. Today, we are going to "Define" the problem that our web pages will solve.

Personal Website Planning Guide

Distribute: Have students open a journal or optionally distribute copies of the activity guide.

Brainstorm Content: Read through this section of the activity guide. Then give students several minutes to silently brainstorm content they might want to include on a personal website.

Teaching Tip

Use Journals: The activity for today's lesson can easily be completed in student journals. Project or otherwise share the prompts and let students complete their work in their journals.

Share: Have students share their content ideas with a neighbor.

Remarks

> When sharing ideas with other people it's important to consider not just what you want to say, but how you want to say it. You just created a list of ideas you might want to share on your personal websites. Let's go look at some personal websites other students have made and think about the content they're sharing as well as how they are presenting that message.

View Personal Web Pages: Send students to Code.org and have them look through the exemplar web pages in pairs. They can use these web pages as inspiration for their own personal web pages. You may want to review the purposes of the various websites and why they are personally significant to their creators.

Web Page Purpose: Give students some time to think about what purposes their own web pages will serve. Try to steer the conversation away from the exact content of the site, which they will have time to plan in a later lesson.

Share: Give students a chance to share their website purposes with a neighbor.

Assessment Opportunity

Students should identify their websites as an opportunity to express themselves and their own goals. Check that each student has an explanation of why their site is personally significant.

Wrap Up (5 mins)

Journal 3-2-1

Question of the Day: How can we use websites to express ourselves?

Assessment Opportunity

As students share different aspects of the websites, make sure that the discussion highlights the creative aspects of making websites, and that websites can be a form of personal expression unique to each individual.

Prompt: Now that you've had a chance to share your website ideas, write down...

- 3 reasons your site will be special to you
- 2 reasons your neighbor's site will be special to them
- 1 thing you'd still like to learn how to do in HTML or CSS

Remarks

> In the next few lessons, we'll be working to bring many of your ideas to reality. Some of the content you want to share might change as we go through the unit, but this goal of using websites for self-expression will be there throughout.

Collect: If students did not put their web page ideas in a journal, collect them. They will explicitly be referenced again when they begin their project.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- ▶ **AP** - Algorithms & Programming
- ▶ **IC** - Impacts of Computing

Lesson 11: Styling Elements with CSS

Overview

Question of the Day: How can we style the images and layouts of our pages?

This lesson continues the introduction to CSS style properties, this time focusing more on non-text elements. Students begin this lesson by looking at a website about Desserts of the World. They investigate and modify the new CSS styles on this website, adding their own styles to the page. After working on the Desserts page, students apply their knowledge of new CSS properties to their personal websites.

Purpose

This lesson builds on what students previously learned about CSS properties, this time looking at properties that can be used on elements. These new properties impact the visual look of the web page beyond its text and give students more precise control over the layout of their pages. As students expand their knowledge of style properties, many may have questions about how they can do even more with CSS. Curious students can explore more properties at **W3 Schools** .

Assessment Opportunities

1. **Use CSS properties to change the layout properties of elements.**

   See Level 8 in Code Studio.

2. **Create a CSS rule-set for the body element that impacts all elements on the page.**

   See Level 8 in Code Studio

Agenda

Warm Up (5 minutes)

Discuss: What Styles Do You Want?

Activity (40 minutes)

Web Lab: Styling Elements with CSS

Wrap Up (5 minutes)

View on Code Studio

Objectives

Students will be able to:

- Use CSS properties to change the size, position, and borders of elements.
- Create a CSS rule-set for the body element that impacts all elements on the page.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Styling Elements with CSS** - Slides
- **Body Styling** - Resource Page
- **Layout Properties** - Resource Page

Introduced Code

- `width: value`
- `margin: value`
- `height: value`
- `border-width: value`
- `border-style: value`
- `border-color: value`
- `border-radius: value`
- `background-color: value`
- `float: value`

Teaching Guide

Warm Up (5 minutes)

Discuss: What Styles Do You Want?

Display: Send students to the sample web page in Code Studio or display it on the board.

Prompt: What are two CSS styles on this page that you already know? What are two styles on the page that you don't know how to code yet?

Code Studio levels

- Levels
- **2**

Discuss: Have students share different stylings on the page.

Remarks

> Today we are going to learn more properties we can use to style our web pages, which will allow you to add some of the styles we listed in this discussion.

Question of the Day: How can we style the images and layouts of our pages?

Discussion Goal

Goal: This discussion serves as a review of the CSS properties students have already learned and showcases some of the new properties they will be learning in this lesson. Some of the new properties showcased are:

- Adding background colors to things
- Being able to move things around on the page (the images to the left of the text)
- Being able to add borders to and round corners of images

Activity (40 minutes)

Web Lab: Styling Elements with CSS

Transition: Send students to Code Studio.

Teaching Tip

Pair Programming: Consider using pair programming for some or all of this lesson, in particular as students are learning new CSS properties.

Code Studio levels

Lesson Overview 1 *(click tabs to see student view)*

Sample Website *(click tabs to see student view)*

Exploration 3 *(click tabs to see student view)*

Skill Building 4 5 6 7 *(click tabs to see student view)*

Styling Elements 8 8a 8b 8c 8d 8e 8f

Assessment 9 *(click tabs to see student view)*

Wrap Up (5 minutes)

Question of the Day: How can we style the images and layouts of our pages?

Journal: Have students add the new properties they learned to the CSS Properties page in their journal or the class poster.

Prompt: How might you want to use these new styles in your personal web page?

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- ▶ **AP** - Algorithms & Programming

Lesson 12: Your Web Page - Prepare

Overview

Question of the Day: What do we need to do to prepare to build our web pages?

In this lesson, students engage in the "prepare" stage of the problem-solving process, deciding what elements and style their web page will have. They begin by reviewing the different HTML, CSS, and digital citizenship guidelines they will need in building their web pages. They then describe and sketch their pages, listing the tags and styles they will use to get the layout and design that they decided on. They then move online to find and download the images they will need for their pages. Afterwards, they reflect on how their plan will ensure that the website does what it is designed to do.

Purpose

This lesson reinforces the idea that students should design and plan their pages before they start coding. It provides a structured process for planning that ties into the problem solving process that threads throughout the course. The plan should tie back to the "Define" worksheet that students completed a couple lessons before, and gives them something to use as they build their pages in the next lesson.

Assessment Opportunities

1. **Logically separate the content, structure and formatting of a digital artifact**

   In the activity guide, check that the design sketch includes the content, and that the tag and style columns in the "Describe your styles" section are filled out with HTML tags on the left and style descriptions or CSS on the right.

2. **Create documentation that explains the design decisions of an artifact**

   In the wrap up, check that students have tied their design decisions in the Activity Guide with the goal of the website as stated in the earlier lesson.

Agenda

Warm Up (5 min)
Activity (20 min)
- **Describe Your Page**
- **Describe Your Styles**
- **Find Your Images**

Wrap Up (5 min)

View on Code Studio

Objectives

Students will be able to:

- Logically separate the content, structure and formatting of a digital artifact
- Create documentation that explains the design decisions of an artifact

Preparation

- [ ] Print out one copy of the activity guide for each student.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Project Guide - Personal Web Page - Prepare** - Exemplar
- **Person Web Page - Prepare** - Slides

For the Students

- **Personal Web Page - Prepare** - Project Guide Make a Copy

Journal Prompt/Exit Ticket

Teaching Guide

Warm Up (5 min)

Prompt: We've learned a lot of HTML and CSS in this unit, and also a lot about how to be responsible digital citizens. We're about to plan out the specifics of our web pages. Take a few minutes to think about some of the most important things that we should remember during the project in these categories:

1. HTML tags and tips/tricks for using them
2. CSS properties and tips/tricks for using them
3. How to be responsible and safe online

Discuss: Have students share out their ideas and display them at the front of the class.

Discussion Goal

Goal: This is a chance for students to remind themselves of (and for you to check on) the most important things that they have learned in the unit so far. While the focus may vary from class to class, most classes should have a few things to say in every category. Make sure that you are highlighting the differences between structure (HTML) and style (CSS) in your conversations. If you have noticed particular obstacles for your students, this is a good place to make sure they are prepared to face them.

Question of the Day: What do we need to do to prepare to build our web pages?

Activity (20 min)

Distribute: Hand out student journals or the activity guide, if students are not using journals. If available, students may want to use colored pencils or crayons to sketch their pages.

Describe Your Page

Give students a few minutes to describe and sketch out their page. Remind them that they should be thinking about layout as well as content, but that they do not need to include every word of the page. They can also put more details about the element styles in the next section.

Describe Your Styles

Each student should choose tags related to some of the elements on their pages and describe what those elements will look like (color, size, etc.). It's not necessary that they write down the exact CSS properties, but there should be enough information that they can use it to guide them when they make their pages.

Find Your Images

Transition Allow students to go online to find the images that they want to use for their sites. Make sure that they are writing down the information about the copyright and that they can tell you where the image is from, so that they (or you!) can find it in the future.

Teaching Tip

You may want to have each student check in with you on their web page plan before allowing them online to find their images. Make sure each student has sketched out a rough site and described the styles for a few different tags. The sketch and description should show that the page will be sufficient to demonstrate that they have acquired the target skills and understandings of the chapter.

Wrap Up (5 min)

Journal Prompt/Exit Ticket

Question of the Day: What do we need to do to prepare to build our web pages?

Assessment Opportunity

Check that students have tied design decisions to the purpose of the website as explained in the "Websites for Expression" lesson.

Prompt: Think back to the "Define" part of this project. Explain two ways that your plan will make your personal web page successful.

Collect: Collect the journals or the activity guides where students planned their pages. They will need them in the next lesson.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- ▶ **AP** - Algorithms & Programming

Lesson 13: Project - Personal Web Page

Overview

Question of the Day: What skills and practices help when we code web pages?

After quickly reviewing their debugging process, students go online to create the pages that they have planned out in previous lessons, with the project guides as a reference. Once they have finished with their pages, they complete a short reflection on the process, what they are most proud of, and what they would like feedback on. They then engage in a structured peer feedback process before making final edits to the pages. Afterwards, they reflect on the skills and practices that helped them to be successful.

Purpose

In the previous lessons, students have planned out their personal web page. In this lesson, they'll get to create and share it with the rest of the world. This should reinforce the value of the planning process, and also give them a chance to practice effective communication through peer feedback. Students should have a chance to engage in all five practices in this lesson: Problem Solving, Persistence, Communication, Collaboration, and Creativity.

Assessment Opportunities

Use the project rubric attached to this lesson to assess student mastery of this chapter's learning goals.

Agenda

Warm Up (5 minutes)

- **Debugging 3-2-1**

Activity

- **Personal Websites**
- **Peer Review**
- **Pre-Review**
- **Reviewer Section**
- **Free Response Feedback**
- **Creator Response**

Wrap Up (10 minutes)

- **Journal: Personal Website**

View on Code Studio

Objectives

Students will be able to:

- Create a digital artifact

Preparation

- [ ] Ensure students have access to the Project Guide from the last lesson.
- [ ] Print copies of the reflection and peer feedback documents.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Practices Reflection** - Exemplar
- **Project Guide - Personal Web Page - Reflect** - Exemplar
- **Peer Review - Personal Website** - Exemplar
- **Personal Web Page** - Slides

For the Students

- **Personal Web Page** - Peer Review Make a Copy
- **Personal Web Page - Reflect** - Project Guide Make a Copy
- **Personal Web Page** - Rubric Make a Copy
- **Computer Science Practices** - Reflection Make a Copy

Teaching Guide

Warm Up (5 minutes)

Debugging 3-2-1

Remarks

> In this lesson, you'll be coding your web page and sharing it with the world. One of the biggest parts of coding is debugging.

Prompt: What are the top **3** bugs you have seen so far when making web pages? What are **2** things you can do while coding to make bugs easier to find and fix? What is the **1** piece of advice you'd give someone who has a bug?

Give students a few minutes to brainstorm some ideas, then allow them to share with the class. You may want to project their ideas and leave the display up as the students code their pages.

Question of the Day: What skills and practices help when we code web pages?

Discussion Goal

The purpose of this discussion is both to normalize debugging and to make sure students start the coding part of the project with some good strategies that will help them to debug. Common bugs they may have seen might be spelling errors, forgetting to link the style sheet, not properly nesting tags, etc. This will vary from class to class, but most students will have encountered multiple bugs in the chapter. While coding, students should use proper formatting to help them to read their code, code small bits at a time and check as they go, and use good naming conventions. For debugging advice, students may give dispositional advice ("Don't give up!", "Remember that it's normal"), recommended resources ("Ask a friend to look at it", "look at the map levels"), process-based advice ("describe the bug first, then look for it before you change stuff", "look at what's messed up and check the spelling in that part"), or tools based advice ("look above where the pink is", "use the inspector tool"). Give students time to share their advice, and make sure that they are referencing the Debugging Process.

Activity

Personal Websites

Distribute Return the "Define" and "Prepare" portions of the Project Guide to the students.

Transition: Send students to Code Studio.

Code Studio levels

- Levels
- **2**
- **3**
- **4**
- **5**
- **6**
- **7**
- **8**

Student Instructions

View on Code Studio

Your Personal Web Page

In the next few levels, you'll be completing and publishing your personal web page. This is your chance to share your ideas with the world, and also to show all the things that you have learned.

You'll need...

Teaching Tip

Planning Checkpoint

Check over student plans before allowing them to continue on the rest of the levels.

- Your completed project guide
- The images you downloaded
- The project rubric

Here are the things you have learned...

- How to use HTML to structure the content of your page
- How to use CSS to style the text, colors, and layout of your page
- How to format your code to make it easier to read
- How to debug HTML and CSS code
- How to use use images in a responsible way
- How to protect your personal information online

Examples

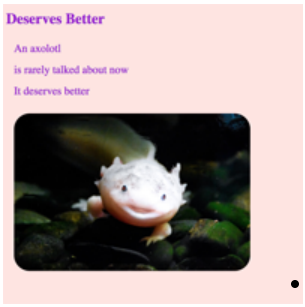
The Cutest Dog

My Trip

Musical Instruments

Recycling Club

Haikus



Student Instructions

View on Code Studio

Upload Images

Next, you'll need to upload all of your images into your project.

Do This

- Upload all of the images listed in your project guide into your project.
- Make sure each image file name uses good naming conventions

Student Instructions

View on Code Studio

Add HTML

Next, you should add the HTML to your page.

Do This

- Add HTML to make the page you sketched in your project guide.
- Double check that the page has everything you want, and make any changes you need.

Student Instructions

View on Code Studio

Add Styles

Next, style the page according to your plan.

Do This

- In the stylesheet, add CSS rule sets for your tags.
- Check to make sure that the page looks right, then make any adjustments

Student Instructions **View on Code Studio**

Review Your Project

You're almost ready to publish your project, but you should check one more time that you have fulfilled all the requirements for this project.

Do This

- Check that you are comfortable sharing all the information that's on your site.
- Check that all of your images are correctly attributed, and that you have the right to put them on your site.
- Check that your project includes everything included in the project rubric.
- Use comments and whitespace to make your website readable.
- Ask a classmate to help you find any potential problems with your site.

Student Instructions **View on Code Studio**

Questions to Consider

- What do you think your responsibilities are as a website publisher?
- Why might you want to see the code or remix someone else's site?

Student Instructions **View on Code Studio**

Share Your Project

It's time to share your project with the world!

Do This

- Click the Share button at the top of this page.
- Copy the URL it gives you, and email it to the people you want to see your page.

Teaching Tip

Discussion Goals

The video content is fairly straightforward, but this is your last check in with students before they publish, so it's a good time to make sure they have full thought through the implications of publishing to the entire world. They should make sure that they are not sharing any sensitive information, and that they have the rights to use all the content on the page.

As they began to share, they should also think about how they respect the work of other website publishers, in particular their classmates. You may want to take some time to establish classroom norms around how they talk about and give feedback on their classmates' sites, as well as guidelines for using code that others have written.

Peer Review

Distribute: The 'Personal Web Page' Reflect and Peer Review Guides.

Support: Help students as they complete the Personal Web Page - Reflect guide. This guide asks students to reflect on whether the web page met the criteria students came up with in the "Define" phase, and whether they followed through on the plan they made in the "Prepare" phase. It then prompts them for what they like the most and what they would want to improve on their site, as well as what kind of feedback would be helpful to them.

Group: Place students in pairs.

Pre-Review

Before students review each other's work, each student should fill out the top of the guide with what they are most interested in feedback on.

Reviewer Section

After switching guides, the students evaluate how well the projects met the criteria of the rubric. Encourage students to find evidence for learning in their peer's projects, but also to suggest how the projects could be taken further. You may need to support students in providing constructive feedback.

Free Response Feedback

Students then use the "I like, I wish, What if" structure to provide more open-ended feedback to each other. Again, some classes may need specific support in providing constructive feedback.

Creator Response

Next, students should switch back and creators reflect on how the feedback can help them make their project better. Students may then go back to Code Studio to make the revisions that they have decided on.

Collect: Project Guides and Peer Review Guides.

Wrap Up (10 minutes)

Journal: Personal Website

Question of the Day: What skills and practices help when we code web pages?

Prompt: After the first day of pulling together your personal website, reflect on your experience.

- How did you use the problem-solving process in creating your site?
- What other skills and practices were helpful as you made your web page?

Discuss: Have students share out the different skills and practices that they used.

Discussion Goal

Goal: Students should reflect on the process so far. If students have trouble thinking of different practices that are helpful, you may want to remind them of the five practices of computer science: problem solving, persistence, creativity, communication, and collaboration. Students may also mention more specific skills such as using documentation, planning, teamwork, and debugging. Prompt students to explain how these practices helped them as they coded.

Send students to Code Studio to complete their reflection on their attitudes toward computer science. Although their answers are anonymous, the aggregated data will be available to you once at least five students have completed the survey.

Code Studio levels

- Levels
- **9**

Student Instructions

View on Code Studio

This level is an assessment or survey with multiple questions. To view this level click the "View on Code Studio" link.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- ▶ **AP** - Algorithms & Programming
- ▶ **IC** - Impacts of Computing

Lesson 14: Websites for a Purpose

Overview

Question of the Day: What are the different reasons people make websites?

In this lesson, students explore the different reasons people make websites. They first think of different reasons that they visit websites, then investigate web sites that have been created to address a particular problem. After deciding what different purposes those websites might serve for the creators, they begin to think about the problem that they might want to solve with a web site. At the end of the lesson, students form the groups that they will be in for their chapter projects.

Purpose

This lessons transitions students from thinking about websites as a form of personal expression to considering how websites might serve broader purposes for their creators. It also serves as a soft introduction to the chapter project, in which students will work in teams to create websites to solve a problem of their choosing.

Assessment Opportunities

1. **Identify the reasons someone might create a given website**

   Check the table in the activity guide for reasonable purposes for each websites.

Agenda

Warm Up

  The Last Website you Visited

Activity

  Purpose of Websites

Forming Groups

Wrap Up (5 mins)

View on Code Studio

Objectives

Students will be able to:

- Identify the reasons someone might create a given website

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Websites for a Purpose** - Exemplar
- **Websites for a Purpose** - Slides

For the Students

- **Websites for a Purpose** - Activity Guide
  Make a Copy

Teaching Guide

Warm Up

The Last Website you Visited

Prompt: What was the last website you visited? Why did you go to that website?

Discuss: Have students share out the last website they visited. Make sure students share why they went to that website and whether the website provided what they were looking for.

Remarks

> We came up with a lot of reasons why we visit websites, but that's only one side of the picture. The people who make websites also have their own reasons for doing so. In the next activity, you're going to start thinking about the purposes that various websites serve for both the user and the creator.

Question of the Day: What are the different reasons people make websites?

Teaching Tip

Websites vs. Apps: You may find that students don't *think* that they actually visit websites very frequently, because they use apps instead. If you encounter this, encourage students to consider whether those apps might also have website versions. Facebook, for example, might be used more frequently from an app, but it originally started as a website, and can still be accessed from the web.

Discussion Goal

Goal: The goal of having this discussion is to pull out that websites share information and that people go to websites for a particular purpose.

Activity

Purpose of Websites

Group: Put students in pairs.

Distribute: Pass out a copy of the activity guide to each student.

Direct students to the "Sample Websites" level on Code Studio.

Code Studio levels

Lesson Overview 1 ***(click tabs to see student view)***

Top Websites 2 ***(click tabs to see student view)***

Exploring Websites

Sample Websites

This activity guide asks students to consider what purposes some sample web pages might serve. Student pairs select two sites that interest them and for each discuss:

- Why people might use that site (what purpose does it serve users?)
- Why the creators might have made that site (what purpose does it serve the creators?)

Encourage students to be as detailed as possible when brainstorming the purposes of these sites.

Discuss: Once everyone has had a chance to brainstorm about their sites, give the class a chance to discuss their thoughts on the sample websites.

If students haven't had time to brainstorm reasons they might make a website, allow them to do so before moving on to form their groups.

Forming Groups

Remarks

> Over the next few classes, you'll have a chance to work in a group to create your own website to help solve a problem.

Share: Ask students to share out the different problems that they could address with a website and display their answers in the front of the classroom.

Group: Based on the natural discussion of how students reacted to the different topics, groupings may have started to emerge. Allow students to form groups of 3-4, or assign them into groups.

Teaching Tip

They don't need to necessarily get it "right" for each site, but they should demonstrate that they have considered the potential purposes that a website might serve for the creator. If students struggle to identify the purpose of a site, consider asking the following prompts:

- Does the website creator want the user to do something?
- Does the website try to convince the user of something in particular?
- What problem is the website addressing?
- What impact does the creator want the website to have?

Wrap Up (5 mins)

Question of the Day: What are the different reasons people make websites?

Prompt: Your team will work together over the next few lessons to create a website to address a problem. Together, come up with a team motto or logo design that will remind you (1) why the problem is important to solve (2) how you will work together well as a team.

Share: Allow teams to share out their designs and mottos.

Discussion Goal

The goal of this discussion is to prepare students to think of websites as a tool to solve problems and effect change. As students discuss the prompt, encourage them to imagine why they might create a site similar to those in the examples, and what problems they might address with a site.

Teaching Tip

There are many considerations when forming groups for a long-term project. Depending on your class, you may choose to assign groups, allow students to form their own groups, or another approach that works best for your class. However you decide to group students, it will be important that they have their groups for the beginning of the next class session.

Discussion Goal

As students share out their mottos or logos, encourage them to explain how their values are reflected in them, highlighting the importance of effective collaboration and a focus on shared goals.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- **IC** - Impacts of Computing

Lesson 15: Team Problem Solving

Overview

Question of the Day: How can we work together to make a great team?

Students work together to set group norms and brainstorm what features they would like their websites to have. The class starts by thinking of some popular teams in different contexts, then reflects on what makes teams successful. They then get into their own teams and make a plan for how they will interact and reach success in their own projects. Afterwards, the teams begin to brainstorm ideas for their website project.

Purpose

This lesson explicitly addresses the challenges students may find working in a group and supports them in crafting a plan to overcome these challenges. Students should refer back to this lesson throughout the unit as they work in teams to complete their projects.

Agenda

- **Warm Up (10 Minutes)**
- **Activity**
  - **Team Goal**
  - **Skills and Goals**
  - **Bringing Different Ideas Together**
  - **Looking forward**
- **Brainstorming**
- **Wrap Up**
  - **Shout-outs!**

View on Code Studio

Objectives

Students will be able to:

- Communicate and collaborate with classmates in order to solve a problem

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Website Team Plan** - Exemplar
- **Teamwork - Dealing with Disagreement** - Video (**download**)
- **How Teamwork Works** - Video (**download**)
- **Team Problem Solving** - Slides

For the Students

- **Website Team Plan** - Activity Guide
  Make a Copy

Teaching Guide

Warm Up (10 Minutes)

Game: Top Five Teams

Remarks

> Today is the first day that you get to work in your teams. Before we do that, we're going to think of some of the top teams in the world. When I say a category of team, everyone should write down the team you think **most of the class** will answer as the top team. If you choose the most popular team, you get a point. Remember, it's not the one you think is the top, but the one you think most people will answer.

1. Top Music Team (band or singing group)
2. Top Sports Team
3. Top Superhero Team
4. Top Villain Team
5. Top Kid-only Team

Have students share out their answers after each one, and note the most popular answer, giving "points" to those who guessed correctly.

Teaching Tip

You may also choose to have this game displayed as the class walks in, and allow them to write down their answers at their own pace.

Prompt: We've mentioned some very successful teams. Write down three things that you think made these teams so successful.

Share: Allow students some time to write down their own answers, then have them share with the rest of the class. Highlight characteristics that will be helpful when they are working with their teams on the project.

Discussion Goal

This game and discussion should prime students to think about strategies for successful teamwork on the project. Feel free to swap out the categories for ones that make more sense for your own classroom.

Question of the Day: How can we work together to make a great team?

Activity

Group: Place students in their project groups.

Display: Show the Teamwork video (available in the slides and on Code Studio).

Distribute: Hand out the activity guide.

Team Goal

The teams should already have the topic for their project, but they should check that they are all in agreement about the topic.

Skills and Goals

Each student should identify their own personal strengths and areas of growth for the project, then share those out with the group.

Students use what they've learned to come up with a plan for their group and how they will support each other.

Teaching Tip

This type of personal reflection and sharing may be difficult for some students. Depending on the class, you may want to take some time to review how to listen respectfully to others in the group. This first activity is a good chance for students to practice this type of listening. Some groups may need teacher intervention to explain what sorts of specific behaviors promote good group dynamics.

Bringing Different Ideas Together

Remarks

> Part of working in groups is having lots of different ideas, and team members don't always agree on how to bring their ideas together. We're going to explore some different ways that a team can manage disagreement to make their product even better.

Display: Show the video on Managing Disagreement, which is available on Code Studio and in the lesson slides.

🎓 Students plan how they will deal with disagreement and come up with strategies for advocating for themselves and their team members.

🎓 Content Corner

Fostering an inclusive culture and collaborating around computing are core practices in the CS K12 Framework. Students may need guidance on effective strategies for inclusion and collaboration. For example, some students may suggest a "majority rules" approach to disagreement. Challenge students to think of how that may exclude valuable perspectives and whether there are better strategies that can incorporate the entire team's voice.

Looking forward

Students define what success will look like in the context of the project and anticipate what will be the most challenging and most fun parts of the project.

Circulate: As students are completing or have completed the guide, circulate around the room and ask them about their plans for working together in a group. You may want to point out the advantages and disadvantages of certain strategies.

Share: Have different groups share out aspects of their plans. You may want to call out specific effective strategies that you saw during the activity.

Brainstorming

Discuss: Give students time to brainstorm ideas for their project in their teams. They can talk about different content or website features that they would like. As they discuss, keep an eye out for potential problems in group dynamics and intervene if necessary. Remind team members of their plans and how they can contribute to a successful team.

Wrap Up

Shout-outs!

Question of the Day: How can we work together to make a great team?

Prompt: When you work in a team, it's important to recognize when your team members do something great. For each member of your team, write down one "shout-out" that recognizes a special way they contributed to the group today.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- ▶ **AP** - Algorithms & Programming
- ▶ **IC** - Impacts of Computing

Lesson 16: Sources and Research

Overview

Question of the Day: How do we find relevant and trustworthy information on the Internet?

This lesson encourages students to think more about how to find relevant and trustworthy information online. After viewing and discussing a video about how search engines work, students will search for information relevant to their site. They'll need to analyze the sites they find for credibility to decide which are appropriate to use on their own website.

Purpose

As students are finishing up their own websites, this lesson encourages them to also think about their responsibilities as consumers of information. By the end of this lesson, students should have developed strategies for determining which websites are more trustworthy and tie these strategies back to their own role as content producers by looking for ways to make their own sites appear more trustworthy.

Assessment Opportunities

1. **Use basic web searching techniques to find relevant information online**

   In the activity guide, check that students have filled out the chart with relevant web sites.

2. **Identify elements that contribute to a website's trustworthiness or untrustworthiness**

   Use the students' trustworthiness checklist and discussions around it to get a broader sense of the elements students can identify, as well as the final journal prompt for more individual reflection about how a student could use those elements in a personal website.

Agenda

Warm Up (10 minutes)

- **Internet Scavenger Hunt**

Activity (30 minutes)

- **Research and Trustworthiness**
- **The Trustworthiness Checklist**
- **How Search Works**

Wrap Up (5 minutes)

- **Journal**

View on Code Studio

Objectives

Students will be able to:

- Use basic web searching techniques to find relevant information online
- Identify elements that contribute to a website's trustworthiness or untrustworthiness

Preparation

- [ ] Print a copy of the Internet Scavenger Hunt activity guide for each pair of students, or prepare to project the questions to the class.
- [ ] Create a blank poster titled **Trustworthiness Checklist** and place it on the wall.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Sources and Research** - Slides
- **Links and Research** - Exemplar

For the Students

- **Links and Research** - Activity Guide Make a Copy
- **How Search Works** - Video (**download**)
- **Internet Scavenger Hunt** - Activity Guide Make a Copy

Vocabulary

- **Relevant** - closely connected to a topic
- **Search Engine** - A program that searches for items on the World Wide Web.
- **Trustworthy** - reliable, honest, and truthful

Teaching Guide

Warm Up (10 minutes)

Internet Scavenger Hunt

Group: Place students in pairs. They do not need to be in their project groups for this warm up, but will transition to those groups for the main activity.

Distribute: Each group will need a copy of the Internet Scavenger Hunt activity guide.

Teaching Tip

Reducing Printing: Rather than print an activity guide for each student, consider displaying the questions and allowing students to answer in their journals or on scrap paper.

Transition: Send students to the computers to prepare for the scavenger hunt.

Remarks

> You have seven minutes to complete as much of this scavenger hunt as you can. Your goal isn't to answer *every* question on this list, but to find as much *accurate* information as possible in the time you've been given.

Prompt:

- Which things were hardest to find and how did you find them?
- How do you know that the information was accurate?

Discussion Goal

Goal: The first three prompt questions are intended to help students identify any searching techniques that they currently use. If students *don't* have clear strategies, you may want to spend some time discussing basic search techniques. Keep track of search strategies on the board for reference later.

As students discuss the search engines that they used in the process, you may want to challenge them to think about how the search engines are able to give them relevant results. This can provide a good transition to the video in the next activity.

Discuss: Student pairs share out what they were able to discover during the scavenger hunt and what strategies worked well for finding accurate information. If possible, use the discussion to introduce the key vocabulary for the lesson.

Key vocabulary:

- relevant - closely connected to the topic (answers the question)
- trustworthy - reliable, honest, and truthful (gives a correct answer)
- search engine - a program that searches for items on the World Wide Web

Question of the Day: How do we find relevant and trustworthy information on the Internet?

Activity (30 minutes)

Research and Trustworthiness

Remarks

> As you begin to build your sites, you may want to use information that you find on the web, or link to other sites relevant to the problem that you are trying to solve. As you do that, you'll need to think about whether the information you are using is trustworthy.

Group: Place students in their project groups.

Distribute: Give each pair one copy of the Links and Research activity guide, or hand out the journals.

> **Search:** Give student groups about ten minutes to search online and fill in the table on the activity guide.
>
> **Share:** Ask student groups to share out the different sites that they found and which they decided were the most and least trustworthy and why. Push students to give detailed reasons for why they trust a site or not, and keep track of them on the board.

Search: Give students a few more minutes to look through their source sites again with the new criteria from their classmates. If there is more class time, students may want to continue to find sources for their site.

The Trustworthiness Checklist

Set Up: Start a poster on the wall labeled **Trustworthiness Checklist**.

Prompt: Now that we've identified some sites that are, and are not, trustworthy, work with your group to come up with a list of things to check for when trying to determine whether or not to believe a website.

Share: Have groups share out their lists. As a class, generate a class Trustworthiness Checklist on a poster. You can refer back to this in the future whenever asking students to find information online.

Assessment Opportunity

Check students' lists to make sure that they are coming up with criteria that relate to a site's trustworthiness. For example, students might mention that trustworthy sites have clear contact information, cite their sources, tend to have fewer and less invasive ads, and may be better designed than less credible sites. The domains .edu and .gov are reserved for schools and the government, and may be more credible.

How Search Works

Display: Watch the **How Search Works - Video** with the class.

Wrap Up (5 minutes)

Journal

Prompt: Think about your own websites - do you think people would find your site trustworthy or untrustworthy? What changes could you make to your site to encourage users to trust your content?

Assessment Opportunity

Students should connect the criteria from the lists that they have created to their own sites. While they may not be able to control the web address of their site, they should be able to identify design elements and content features that will make their sites more trustworthy, such as orderly layout and properly citing sources.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- **IC** - Impacts of Computing

Lesson 17: CSS Classes

Overview

Question of the Day: How can we create different styles for the same type of element?

This lesson expands on the CSS that students have already learned by introducing classes, which allow web developers to treat groups of elements they want styled differently than other elements of the same type. Students first investigate and modify classes on various pages, then create their own classes and use them to better control the appearance of their pages. They then reflect on how they could use this skill to improve their team websites.

Purpose

Up until this point, the only styling students have been able to do is styling by element, which means that every element of a particular kind has the same style. Classes allow for web developers to group together a set of elements they want to style. This means students can single out a certain element they want to style or group together elements from one or more types of elements. Once elements are in a class, the class can be used as a selector in a style rule.

Note: Single elements can also be selected by id, but this type of selection is possible with a class applied only to that single element. Because id selection does not add any extra functionality, it is not taught in this course.

Assessment Opportunities

1. **Group elements using classes in order to create more specific styles on their website.**

   See Level 5 on Code Studio.

Agenda

Warm Up (5 minutes)
- **Discuss: What Styles Do You Want?**

Activity (40 minutes)
- **Classes**

Wrap Up (5 minutes)
- **Journal**

View on Code Studio

Objectives

Students will be able to:

- Group elements using classes in order to create more specific styles on their website.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **CSS Classes** - Slides

Vocabulary

- **CSS Class** - An identifier that allows multiple elements in an HTML document to be styled in the same way

Teaching Guide

Warm Up (5 minutes)

Discuss: What Styles Do You Want?

Display: Send students to the sample web page in Code Studio or display it on the board.

Prompt: What are two CSS styles on this page that you already know? What is one thing this page does that we haven't learned how to do yet?

Code Studio levels

- Levels
- **2**

Discuss: Have students share their answers to the questions.

Remarks

> So far, we've been able to style all of the elements on our page, but there's been a catch. We had to style **every** element of the same type in the same way. For example, if we wanted one paragraph to have green text, they all had to have green text. If we wanted to have one image float to the right, they all had to float to the right. Today, we're going to learn a way to get around this problem.

Question of the Day: How can we create different styles for the same type of element?

Discussion Goal

Goal: This discussion serves as a review of the CSS properties students have already learned and prompts them to think about how this page goes beyond that knowledge. Students may not realize it, but this page styles the same types of elements in different ways on different parts of the page. You may want to prompt students to think more deeply about why this is difficult by asking them what the color property of the paragraph element would be in the stylesheet for this page.

Activity (40 minutes)

Classes

Transition: Send students to Code Studio.

Code Studio levels

Lesson Overview 1 *(click tabs to see student view)*

Sample Web Page *(click tabs to see student view)*

Exploration 3 *(click tabs to see student view)*

Skill Building 4 *(click tabs to see student view)*

Using Classes 5 5a 5b

Assessment 6 *(click tabs to see student view)*

Wrap Up (5 minutes)

Journal

Question of the Day: How can we create different styles for the same type of element?

Prompt: Think about your team website. What are two new ideas you have for your site, now that you have classes?

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- ▶ **AP** - Algorithms & Programming

Lesson 18: Planning a Multi-Page Site

Overview

Question of the Day: How do we plan a web page as a group?

Students work in teams to plan out their web sites and create a sketch of each page. They then download the media that they will need for their sites. At the end of the activity, they decide how the work will be distributed among team members and report whether the entire group agreed to the plan.

Purpose

This lesson gives students a chance to plan as a team. They will need to make many group decisions and have effective ways of resolving disagreements. The plan that they create will be referenced over the next few lessons as they build their sites.

Assessment Opportunities

1. Distribute tasks amongst team members.

Check over the work plan at the bottom of the activity guide and make sure that it is specific enough to be useful and that it seems to be a fair and reasonable division of work.

2. Seek and incorporate feedback from team members.

In the wrap up, check that students have reasonable ways of handling disagreement with one another.

Agenda

- **Warm Up (10 minutes)**
- **Activity (30 minutes)**
  - **Overview**
  - **Design Your Site**
  - **Describe Your Tag and Class Styles**
  - **Work Plan**
  - **Find Your Images**
  - **Uploading images**
- **Wrap Up (5 minutes)**
  - **Journal**

View on Code Studio

Objectives

Students will be able to:

- Distribute tasks amongst team members.
- Seek and incorporate feedback from team members.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Project Guide - Website for a Purpose - Prepare** - Exemplar
- **Planning a Multi-Page Site** - Slides

For the Students

- **Website for a Purpose** - Rubric
  Make a Copy
- **Plan a Multi-Page Website** - Project Guide
  Make a Copy

Teaching Guide

Warm Up (10 minutes)

Prompt: Write down the top three fun features that you might like to add to your site.

Share: Allow students to share out some of their favorite features.

Remarks

> Today, you'll have a chance to design your websites in your teams. You'll get to work together to decide how all of these features can go into your sites.

Discussion Goal

The goal of this discussion is to make sure that the various features that students have learned are top of mind when they begin to design their sites. Make sure students are mentioning the features that they have particularly enjoyed in the unit, and review the tags and css properties that create them.

Question of the Day: How do we plan a web page as a group?

Activity (30 minutes)

Group: Place students into project groups.

Distribute: Hand out the project guides, one for each group.

Overview

Review the project requirements with the students, emphasizing that part of the project is working together as a group. Assure them that they will learn how to add new pages and link between them in the next lesson, but that they will plan out the pages that they want first.

Design Your Site

Teams should describe each page in the site, including its purpose. On separate sheets of paper, they should sketch out the various pages. This allows different team members to focus on different pages.

Teaching Tip

You may want to ask groups to run their sketches by you before moving on. Make sure that the pages all appear to be the same style, and that they include a way to navigate from one to another.

Describe Your Tag and Class Styles

Students should decide together how they would like all of the elements to be styled. They may want to refer back to the sketches in order to decide together.

Work Plan

Once the design is set, teams should decide how they will split up the work. There are multiple pages and a style sheet to consider. They should also consider how they will incorporate the different components into a single project.

Check to make sure that all of the students are in agreement about the plan.

Find Your Images

Once students have gotten your approval for their site designs and work plan, allow them to go online to find images for the site.

Uploading images

Once students have gotten their images, allow them to upload them into the project on Code Studio. Every student within each team should have an identical set of images with identical names.

Code Studio levels

- Levels
- **2**

Student Instructions

View on Code Studio

Upload Images

Upload all of your team's images into your project.

Do This

- Upload all of the images listed in your team's web site plan into your project.
- Double check that each image file name uses good naming conventions.
- Double check that everyone on the team has the exact same images with the exact same names.

Wrap Up (5 minutes)

Journal

Question of the Day: How do we plan a web page as a group?

Prompt: Describe a difference of opinion that members of your team had, and how you resolved it.

Assessment Opportunity

Check that student descriptions of the disagreement and resolution involve effective and collaborative strategies for working together.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- ▶ **AP** - Algorithms & Programming
- ▶ **IC** - Impacts of Computing

Lesson 19: Linking Pages

Overview

Question of the Day: How can we combine several different web pages into one website?

Students begin the lesson by looking online for the first web page and discussing how its use of links was what started the web. They then transition to Web Lab where they learn how to make their own links, as well as good conventions that make it easier for users to navigate on a page. Finally, they reflect on their group project and what their personal goals are for the final stretch.

Purpose

Links are the defining characteristic of the web. Although they seem simple, they are what allow us to move seamlessly across the Internet. This lesson will give students practice in using links and introduce them to good navigation practices for their sites.

Assessment Opportunities

1. **Use HTML to create links between pages**

   See assessment level in Code Studio.

Agenda

Warm Up (10 minutes)
- **First Web Page Hunt**

Activity (35 minutes)
- **Web Lab**

Wrap Up (10 minutes)
- **Journal**

View on Code Studio

Objectives

Students will be able to:

- Use HTML to link between web pages.

Preparation

- [ ] Make sure students have access to their website plans from the previous lesson.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Linking Pages** - Slides

Introduced Code

- <a>

Teaching Guide

Warm Up (10 minutes)

First Web Page Hunt

Group: Place students in pairs. They do not need to be in their project groups.

Display: Show the two following prompt questions on the board, and direct students to find the answers online by using a search engine of their choice, or whatever methods they might normally use for research.

1. What was the first web page ever created?
2. What's the one feature it has that we haven't learned how to do yet?

Share: After giving students time to search online, let them share out their answers.

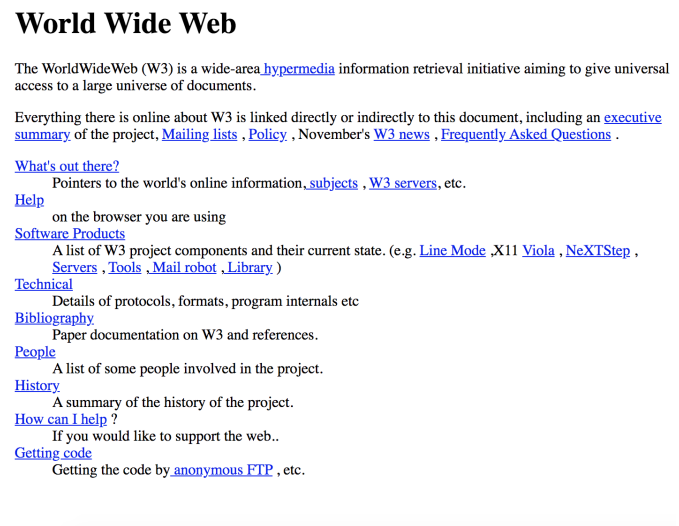
Remarks

> Even though the first web page looks simple, it had something that had never been done before: links. Links are what made the web special, because they let people easily move around the Internet. Today, you'll learn how to put links on your own web pages, so that your team can combine all your pages together into one website.

Question of the Day: How can we combine several different web pages into one website?

Teaching Tip

Although there are many places students could go for the answer to this question, a Google search will most likely take them to an article describing the page that Tim Berners-Lee created on August 6, 1991. The page is comprised of simple text with a few hyperlinks.



World Wide Web

The WorldWideWeb (W3) is a wide-area hypermedia information retrieval initiative aiming to give universal access to a large universe of documents.

Everything there is online about W3 is linked directly or indirectly to this document, including an executive summary of the project, Mailing lists , Policy , November's W3 news , Frequently Asked Questions .

What's out there?
Pointers to the world's online information, subjects , W3 servers, etc.
Help
on the browser you are using
Software Products
A list of W3 project components and their current state. (e.g. Line Mode ,X11 Viola , NeXTStep , Servers , Tools , Mail robot , Library)
Technical
Details of protocols, formats, program internals etc
Bibliography
Paper documentation on W3 and references.
People
A list of some people involved in the project.
History
A summary of the history of the project.
How can I help ?
If you would like to support the web..
Getting code
Getting the code by anonymous FTP , etc.

Activity (35 minutes)

Web Lab

Group: Allow students to continue in their pairs.

Transition: Send students to Code Studio.

Code Studio levels

Lesson Overview 1 *(click tabs to see student view)*

Exploration 2 *(click tabs to see student view)*

Skill Building 3 4 5 *(click tabs to see student view)*

Practice 6 *(click tabs to see student view)*

Adding Pages 7 *(click tabs to see student view)*

Wrap Up (10 minutes)

Journal

Question of the Day: How can we combine several different web pages into one website?

Prompt: Today, you learned how to link pages, which will help your team work together to build one website. Besides all linking to each other, what else will help all your pages feel like a single site?

Discuss: After students have time to write down their thoughts, allow them to share in small groups before taking ideas from the whole class.

Discussion Goal

Students may come up with ideas such as a similar color scheme or styles, or similar content. They may mention a header at the top of the page or navigation bar. The most important thing is that they are thinking of the site as a single project that they are all contributing to, rather than a set of individual web pages.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- **AP** - Algorithms & Programming
- **IC** - Impacts of Computing

Lesson 20: Project - Website for a Purpose

Overview

Question of the Day: What skills and practices will help us work together to make a great website?

Teams have spent a lot of time throughout the chapter planning their websites. In this lesson they are finally able to code their pages. Using the project guide, the team works together and individually to code all of the pages, then puts all of the work together into a single site.

Purpose

This project emphasizes many of the core practices of this course. Students will need creativity, problem solving skills, persistence, collaboration and communication to complete their websites.

Agenda

Warm Up

- **Team Cheer**

Activity

- **Web Lab**

Wrap Up

- **Shout-out!**

View on Code Studio

Objectives

Students will be able to:

- Create a digital artifact
- Distribute tasks among team members and maintain a project timeline

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Website for a Purpose** - Slides

For the Students

- **Website for a Purpose** - Rubric
  Make a Copy

Teaching Guide

Warm Up

Team Cheer

Remarks

> Your teams have been working hard for these past few lessons, so we're going to take a bit of time to celebrate. You have five minutes to think of a great cheer for your team.

Share: Give students some time to come up with a cheer for themselves, then allow them to share with the class if they'd like.

Teaching Tip

Depending on your classroom, you may want to alter the activity. Any activity that gets students in a good mood to persist through coding out this project will work well.

Activity

Web Lab

Remarks

> Now that we're ready to get going, it is time to begin implementing the plans that you've made.

Distribute: Return the "Prepare" project guide to groups.

Transition: Teams log onto Code Studio and begin finalizing their websites.

Code Studio levels

Lesson Overview 1 *(click tabs to see student view)*

Your Team Project 2 *(click tabs to see student view)*

Add Content and HTML 3 *(click tabs to see student view)*

Share Your Pages 4 *(click tabs to see student view)*

Add Style 5 *(click tabs to see student view)*

Share Your Stylesheets 6 *(click tabs to see student view)*

Check Your Work 7 *(click tabs to see student view)*

Wrap Up

Shout-out!

Prompt: Your team just worked really hard! Give one shout-out to each person on the team about something that they did especially well.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

- ▶ **AP** - Algorithms & Programming

Lesson 21: Peer Review and Final Touches

Overview

Question of the Day: How can we use feedback to make our websites better?

This lesson focuses on the value of peer feedback. Students first reflect on what they are proud of, and what they would like feedback on. Teams then work with peers to get that feedback through a structured process that includes the project rubric criteria. Afterwards, students decide how they would like to respond to the feedback and put the finishing touches on their sites. After a final review of the rubric, they reflect on their process. To cap off the unit, they will share their projects and also a overview of the process they took to get to that final design.

Purpose

Peer review encourages students to leverage their peers as resources and develop effective communications skills. The final reflection and presentation allow students to practice communication about their work.

Assessment Opportunities

Use the project rubric attached to this lesson to assess student mastery of the learning goals for this unit. You may also choose to assign the post-project test through Code Studio.

Agenda

Warm Up (5 mins)

- **Journal 3-2-1**

Feedback and Iteration

- **Reflect: Peer Review**
- **Prepare and Try: Final Touches**
- **Reflect: Final Reflection**

Showcase

- **Showcase Set Up**
- **Student Website Showcase**

Post-Project Test

View on Code Studio

Objectives

Students will be able to:

- Give and receive feedback
- Prioritize and implement incremental improvements

Preparation

- [ ] Print a copy of the peer review guide for each student.

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the Teachers

- **Practices Reflection (2020)** - Exemplar
- **Project Guide - Website for a Purpose - Reflect** - Exemplar
- **Peer Review - Final Personal Website** - Exemplar
- **Peer Review and Final Touches** - Slides

For the Students

- **Website for a Purpose** - Rubric Make a Copy
- **Website for a Purpose** - Peer Review Make a Copy
- **Website for a Purpose - Reflect** - Project Guide Make a Copy
- **Computer Science Practices** - Reflection Make a Copy

Teaching Guide

Warm Up (5 mins)

Journal 3-2-1

Prompt: What **3** parts of your website are you most proud of? What are **2** things you learned while working on this website? What **1** thing would you like an outside opinion on?

Share: Allow students to share their responses with the class.

Discussion Goal

This should be a fun time for students to reflect on the great work that they have done, but also recognize that they can always use an outside perspective. This will also prepare them to fill out the creator portion of the peer review guide.

Question of the Day: How can we use feedback to make our websites better?

Remarks

> You should now have a polished product you are proud of. An important part of any major project is to get feedback from people not working on that project with you. They may bring some perspective you might have missed. We will spend today giving and getting feedback. Then you will reflect on how to put this feedback into action.

Feedback and Iteration

Reflect: Peer Review

Distribute: One copy of the peer review guide to each team.

Group: Pair teams up with each other. Alternatively, you could pair individuals from different teams together.

Peer Review Process

> Teams will:
>
> - Open up their website projects in Web Lab.
> - Fill in the top part of the worksheet, identifying what they would like feedback on. (They should have thought about this at the end of the last lesson)
> - Trade places with the other team so each is now looking at the other's sheet and website.
> - Give feedback on the other team's work.
> - Switch back to their sheet and website to review feedback.
> - Make a plan for implementing some of the feedback.

Prepare and Try: Final Touches

Transition: Teams return to Code Studio and make any improvements that were identified in the peer review session. If they did not get any suggestions from the peer review, you may want to give them some suggestions.

Teams should also review the rubric as a final way to check their work.

Reflect: Final Reflection

Distribute: Hand out one copy of the project reflection **to each student**.

> In the reflection, students will reflect on both the process and the product. They should identify aspects of the page itself that they are proud of, as well as how the group worked together. They also describe what they have learned in the course of the project.

Send students to Code Studio to complete their reflection on their attitudes toward computer science. Although their answers are anonymous, the aggregated data will be available to you once at least five students have completed the survey.

Showcase

Showcase Set Up

Setup: Students need:

- A computer to display the website.
- A way to display their website progression screenshots

Student Website Showcase

Students should stand next to their computers and talk to people attending the showcase about their work. If you can't get others to come visit your room for this activity, you can split the class in half and have one half present while the others circulate. Then they can switch.

Post-Project Test

The post-project test is found at the bottom of the Web Development unit overview page on Code Studio (**studio.code.org/s/csd2-2019**).

This test is locked and hidden from student view by default. In order for students to see and take this test, you'll need to unlock it by clicking the "Lock Settings" button and following the instructions that appear.

Standards Alignment

CSTA K-12 Computer Science Standards (2017)

▶ **AP** - Algorithms & Programming