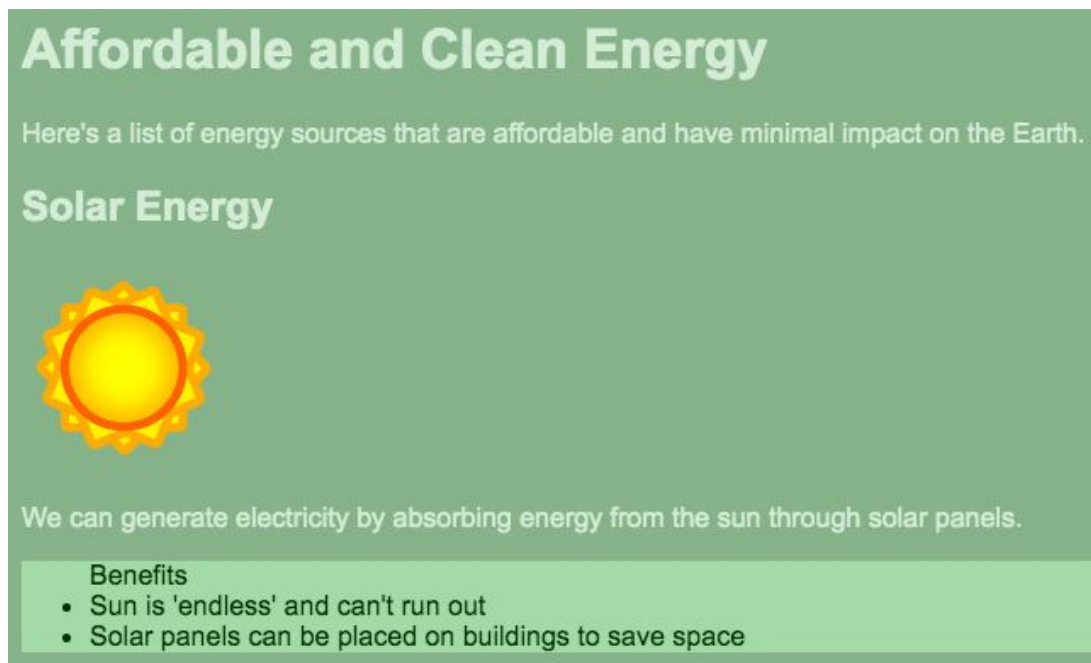



Affordable and Clean Energy: HTML/CSS Teacher Guide



Affordable and Clean Energy

Here's a list of energy sources that are affordable and have minimal impact on the Earth.

Solar Energy



We can generate electricity by absorbing energy from the sun through solar panels.

Benefits

- Sun is 'endless' and can't run out
- Solar panels can be placed on buildings to save space

Summary

- Web address: tynker.com/hour-of-code
- Coding skill level: **Advanced**
- Recommended grade level: **Grades 6+ (U.S.), Years 7+ (U.K)**
- Time required: **50 minutes**
- Number of modules: **1 module**
- Coding Language: **HTML and CSS**

Teacher Guide Outline

Welcome!

- How to Prepare

Activity

- Overview
- Getting Started (20 minutes)
- Tutorial (30 minutes)
- Extended Activities

Going Beyond an Hour

- Do More With Tynker
- Tynker for Schools

Help

Welcome!

Welcome to Hour of Code! This year, Tynker is incorporating meaningful coding projects that align with the United Nations Sustainable Development Goals. The Goals are intended to bring awareness to global challenges and provide a plan of action to achieve a more sustainable future for all. You can read about the 17 Goals and global challenges here:

<https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

Note: Each Goal listed on the website also includes information on *Facts and figures*, *Goal targets*, and *Links*.

In this lesson, students will explore the opportunities and challenges of using energy to meet our wants and needs (*Goal 7*). The lesson is intended to be completed in two different parts (as described in the "Getting Started" section of this teacher guide). In Part 1, students will reflect on *Goal 7: Affordable and Clean Energy* by completing a variety of activities. Part 1 also includes a "Goal 7: Affordable and Clean Energy" assignment, which will allow you to assess your students' understanding. The assignment will also guide your students' thought process before they start coding their Tynker project.

In Part 2, students will follow a step-by-step tutorial where they will create a web page that showcases the benefits and drawbacks of clean energy sources. Students are provided code samples to help them get started, but are encouraged to add or change the code to make it their own. By the end of this lesson, students will have combined creativity with problem-solving skills while reinforcing coding concepts, HTML/CSS syntax, and learning about *Goal 7: Affordable and Clean Energy*.

How to Prepare

This activity is designed for self-directed learning. Your role will be to help students individually and facilitate as students complete the coding activities on their own. The best way to prepare is to:

1. **Familiarize yourself with the material.** After selecting your Tynker lesson (e.g., Affordable and Clean Energy), read through this teacher guide and complete the activity before assigning it to students. This will allow you to troubleshoot anything in advance and plan for potential questions from your students.
2. **Get students excited about coding.** Inspire students and get them excited for the Hour of Code event. Here is a link to resources such as inspirational videos and posters from the Hour of Code website:
<https://hourofcode.com/us/promote/resources#videos>
3. **OPTIONAL: Sign up for a teacher account.** Although an account is NOT required, creating a free teacher account will allow you to access teacher guides,

answer keys, and tons of additional resources. You'll also be able to create free accounts for your students, monitor their progress, and see their projects.

4. **OPTIONAL: Create student accounts.** From your teacher account, you can easily create free student accounts for all your students. This will allow them to save their projects and progress, so they can continue coding when they get home! Again, this is not necessary to complete the Affordable and Clean Energy lesson.
5. **OPTIONAL: Print certificates to hand out.** While signed in to your Tynker teacher account, you can print certificates by clicking on a classroom from your teacher dashboard, clicking the "Gradebook" tab, going to "Hour of Code," and clicking the "Print All Certificates" button. This will only print certificates for student accounts assigned to the selected classroom.
6. **Complete this lesson in two different parts.** Please refer to the "Getting Started" section of this teacher guide.

Activity

To begin Affordable and Clean Energy, have your students open a browser tab to this URL: tynker.com/hour-of-code

Overview

Objectives

Students will...

- Apply coding concepts to create a web page using HTML/CSS
- Read about the Sustainable Development Goals

Materials

- Computers, laptops, or Chromebooks (1 per student)

Vocabulary

- **Code:** The language that tells a computer what to do
- **Sequence:** The order in which steps or events happen
- **Function:** A set of known actions that the computer can perform
- **Variable:** Stores a value, such as a number or a string of text, at a named location
- **Argument:** Value passed into a function
- **Parameter:** An extra piece of information that is passed into a function
- **Loop:** An action that repeats one or more commands over and over

U.S. Standards

- **CCSS-ELA:** RI.6.4, RI.6.7, SL.6.1, RI.7.4, SL.7.1, SL.8.1, RI.8.4, RI.9-10.5
- **CCSS-Math:** MP.1

- **K12CS:** P1.1, P1.3, P2.1, P2.3-2.4, P3.2-3.3, P4.4, P5.1-5.2, P6.1-6.2, P7.2-7.3
- **CSTA:** 2-AP-13, 2-AP-17, 3A-AP-17, 3B-AP-11
- **CS CA:** 6-8.AP.13, 6-8.AP.16, 6-8.AP.17, 9-12.AP.12, 9-12.AP.16
- **ISTE:** 1.c, 1.d, 4.d, 5.c, 5.d, 6.b

U.K. Standards

National Curriculum in England (computing):

- **Key Stage 3 (Years 7-9)**
 - Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability
 - Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns
- **Key Stage 4 (Year 10)**
 - Develop their capability, creativity and knowledge in computer science, digital media and information technology
 - Develop and apply their analytic, problem-solving, design, and computational thinking skills
 - Understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to report a range of concerns

Getting Started (20 minutes)

The lesson is intended to be completed in two different parts:

Part 1

Introduce students to *Goal 7: Affordable and Clean Energy* by completing the following activities:

- Play this short video that explains the 17 Sustainable Development Goals:
<https://youtu.be/0XTBYMfZyrM>
- Ask students to read about *Goal 7: Affordable and Clean Energy*:
<https://www.un.org/sustainabledevelopment/energy/>
Optional: Ask students to read the "Facts and figures" section. Next, ask them to create "true/false" statements about the information, then quiz a friend.
- Tell students that they're going to use Tynker in an upcoming activity to create their own web page about the benefits and drawbacks of different types of clean energy sources. Before students start coding, ask them to complete the "Goal 7: Affordable and Clean Energy" assignment (located on the next page) as an in-class activity.

Name _____

Date _____

Goal 7: Affordable and Clean Energy

Directions: Answer the questions below. Here are some helpful links you can use:

- <https://www.un.org/sustainabledevelopment/sustainable-consumption-production/>
- <https://www.un.org/sustainabledevelopment/energy/>
- <https://www.un.org/sustainabledevelopment/be-the-change/>

Questions:

1. List 3-5 interesting facts you learned about *Goal 7: Affordable and Clean Energy*.

2. What changes can you make to improve energy efficiency in your house?

3. Do you have any lingering questions? If not, what do you believe is the greatest challenge of Goal 7?

4. List at least three helpful websites, books, or documentaries that you can use as a resource to learn more information about Goal 7.

5. List benefits and drawbacks for the following renewable energy sources:

Renewable Energy	Benefits	Drawbacks
Solar power		
Wind power		
Hydroelectric power		
Geothermal power		

6. What is your "Affordable and Clean Energy" Tynker project going to be about?

Use the space below to brainstorm ideas:

Part 2:

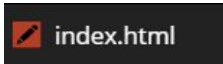
- Now that your students know more about the Sustainable Development Goals, they're ready to move on to the Tutorial and create a meaningful coding project inspired by *Goal 7: Affordable and Clean Energy*.
- *Optional:* If this is your students' first time using the Text Code Editor, play this short video (starting at 00:22 seconds) on how to create an HTML/CSS project: <https://www.youtube.com/watch?v=NKUxXYJggY4>

Tutorial (30 minutes)

This lesson has one tutorial. Facilitate as students complete the Affordable and Clean Energy tutorial on their own:

Affordable and Clean Energy (Tutorial)

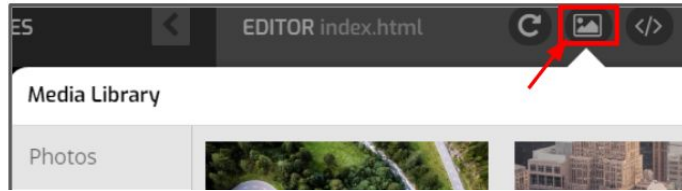
- Ask students to read through the step-by-step tutorial before they start coding.
- Activities include setting up a basic HTML document, setting the CSS styles, adding different headings, creating a list of renewable energy benefits/drawbacks, adding images, and customizing the project.
- Point out to students that they're provided an HTML file to code their web page:



- When students get to "Step 2" of the tutorial, make sure they know what the following CSS styles do:

CSS Styles	What does it do?
<i>margin</i>	Changes the margin to the assigned value (e.g., 30px)
<i>font-family</i>	Sets the font family to the specified font family name (e.g., monospace)
<i>background-color</i>	Changes the background color of an HTML element to the specified color (e.g., purple)
<i>color</i>	Changes the text color of an HTML element to the specified color (e.g., white)
<i>padding</i>	Changes the padding to the assigned value (e.g., 5px)

- If students don't know what to include for their benefits/drawbacks list (*Step 4* of the tutorial), ask them to refer to their "Goal 7: Affordable and Clean Energy" assignment.
- Do students need help finding an image?
 - Ask them to click the Image button and search the Media Library:



Or they can drag and drop an image from their computer. If students are struggling, direct them to this short video on how to add an image:

<https://www.youtube.com/watch?v=ZgeGAU4t9Vs>

- Are students struggling with their code?
 - Make sure they're reading the provided tutorial instructions carefully, then ask them to compare their code with the provided "Your code should look similar to this" sections.
 - Ask students to check their syntax.
- Did students finish early? Direct their attention to the "Bonus Challenges" section of the tutorial, which provides different activities for your students to customize their project.

- **Add descriptions-** Ask students to add their descriptions inside the `<p>` tag. Here's an example:

```
<p>Wind can be used to turn turbines to generate electricity.</p>
```

- **Experiment with the border width, border style, and border color-** Ask students to add the following code inside the `style` tags of their document:

```
p {  
  border: 5px dashed yellow;  
}
```

Explain that this is an example where the border width is set to a value of 5px, the border style is set to "dashed", and the border color is set to yellow. Encourage them to modify the code to make it their own.

- **Try different fonts-** Inform students that they can select a generic font family (e.g., serif, sans-serif, fantasy). Here's an example that uses the font family sans-serif:

```
font-family: sans-serif;
```

Or they can choose a specific font for their web page. Here's an example that uses the font family Arial:

```
font-family: "Arial";
```

- **Try different font sizes-** Ask students to experiment with the `font-size` property, which can change the text size. Here's an example that sets the font size to 14 pixels:

```
font-size: 14px;
```

Extended Activities

Let's Discuss

Pair up students, then ask them to discuss the following questions:

- Which type of renewable energy source are you most interested to learn more about?
- About 800 million people don't have access to electricity. Why do you think this is? What obstacles or challenges do people without electricity or clean energy potentially experience?

Optional: Ask students to share their answers with the class.

Going Beyond an Hour

If your students enjoyed an Hour of Code, they're sure to enjoy the rest of what Tynker has to offer! Tynker offers a complete premium solution for schools to teach computer science. Over 400 hours of lessons are available to take K-8 students from block coding to advanced text coding. We offer tons of resources for teachers, including comprehensive guides, free webinars, and a forum to connect with other educators.

More Hour of Code Activities

Tynker offers many other tutorials for the Hour of Code, including [STEM Hour of Code](#) lessons that you can integrate into the subjects you already teach. Check out the main Tynker [Hour of Code](#) page to see all the tutorials!

Do More with Tynker

With Tynker, kids don't just acquire programming skills—they explore the world of possibilities that coding opens up. Tynker has several interest-driven learning paths that make coding fun, both inside and outside the classroom:

- **Coding and Game Design:** Your students can use Tynker Workshop, a powerful tool for crafting original programs to make games, stories, animations, and other projects. They can even share their work with other kids in the Tynker Community.
- **Drones and Robotics:** Tynker integrates with connected toys, including Parrot drones and Lego WeDo robotics kits, so kids can see their code come to life.
- **Minecraft:** Tynker integrates with Minecraft so your students can learn coding through a game they love. Tynker offers skin and texture editing, as well as a custom Mod Workshop that lets kids try their original code in Minecraft.

Tynker for Schools

Used in over 90,000 schools, our award-winning platform has flexible plans to meet your classroom, school, or district needs. All solutions include:

- Grade-specific courses that teach visual coding, JavaScript, Python, robotics and drones
- A library of NGSS and Common Core compliant STEM courses that are great for project-based learning
- Automatic assessment and mastery charts for whole schools and individual classes and students
- Easy classroom management with Google Classroom and Clever integration
- Professional training, free webinars and other teacher training resources

Need help getting Tynker started at your school? [Contact us](#) to learn more about teaching programming at your school with Tynker!

Help

Need help? Below you'll find answers to frequently asked questions about using Affordable and Clean Energy.

What is Hour of Code?

The Hour of Code is a global learning event in which schools and other organizations set aside an hour to teach coding. No prior coding experience from you or your students is needed! The event is held every December during Computer Science Education Week. You can also organize an Hour of Code year-round. The goal of the Hour of Code is to expand access to computer science education for people of all backgrounds. Learning computer science helps students develop logic and creativity, and prepares them for the changing demands of the 21st century. Tynker has been a leading provider of lessons for the Hour of Code since the event began in 2013. Since then, over 100 million students from 180 countries have finished an Hour of Code.

How do I prepare for Hour of Code?

1. **Familiarize yourself with the material.** After selecting your Hour of Code lesson (e.g., Affordable and Clean Energy), read through the teacher guide and complete the activity before assigning it to students. This will allow you to troubleshoot anything in advance and plan for potential questions from your students.
2. **Get students excited about coding.** Inspire students and get them excited for the Hour of Code event. Here is a link to resources such as inspirational videos and posters from the Hour of Code website:
<https://hourofcode.com/us/promote/resources#videos>
3. **OPTIONAL: Sign Up for a teacher account.** Although an account is NOT required, creating a free teacher account will allow you to access teacher guides, answer keys, and tons of additional resources. You'll also be able to create free accounts for your students, monitor their progress, and see their projects.

4. **OPTIONAL: Create student accounts.** From your teacher account, you can easily create free student accounts for all your students. This will allow them to save their projects and progress, so they can continue coding when they get home! Again, this is not necessary to complete an Hour of Code.
5. **OPTIONAL: Print certificates to hand out.** While signed in to your Tynker teacher account, you can print certificates by clicking on a classroom from your teacher dashboard, clicking the “Gradebook” tab, going to “Hour of Code,” and clicking the “Print All Certificates” button. This will only print certificates for student accounts assigned to the selected classroom.

How do I open Affordable and Clean Energy?

Have your students open a browser tab to this URL: tynker.com/hour-of-code

Who is this activity for?

Affordable and Clean Energy is intended for students in grades 6+ (U.S.) or years 7+ (U.K.) with some coding experience.

Do I need to create Tynker accounts for my students?

No, you do not need to create Tynker accounts for your students.

What devices do I need?

Computers, laptops, or Chromebooks (1 per student) with an internet connection.

What will my students learn?

Students will combine creativity, originality, HTML/CSS syntax, and coding concepts to create an Affordable and Clean Energy web page. In this process, students will develop debugging and logical reasoning skills. Additionally, students will learn about the United Nations Sustainable Development Goals, specifically *Goal 7: Affordable and Clean Energy*.

How can Tynker help me manage my Hour of Code?

Tynker has several free features for registered teachers that will help you manage your Hour of Code. If you set your students up with a Tynker classroom, you will be able to track their progress and print Hour of Code completion certificates for them to keep.

How do my students run their code?

Tell students to select the “play” button:



What does the tutorial include?

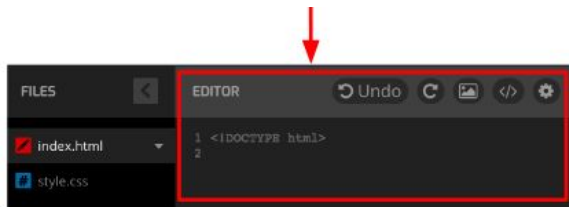
The tutorial includes several features and resources to help your students get started! Here's what you will find:



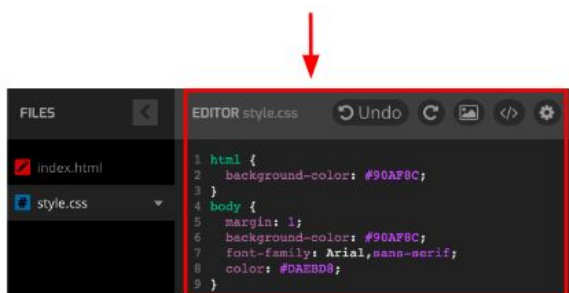
- Step-by-step directions to help your students create an Affordable and Clean Energy project using HTML/CSS.
- 3 different Bonus Challenges, with help to get started.

Where do my students edit their code?

Here's where students can edit their **.html** file:

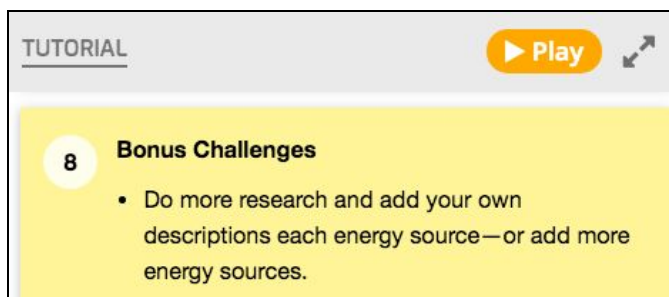


Here's where students can edit their **.css** file:



How do my students customize their project?

- Tell students to scroll down to the “Bonus Challenges” section of the tutorial, which includes directions to help your students make their project unique! Here's what it looks like:



How can I help my students understand their code?

- Check that students are carefully reading the tutorial, which describes each step of the Affordable and Clean Energy project.
- By the end of the project, their code might look similar to this:

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <title>Affordable and Clean Energy</title>
5 <link rel="stylesheet" href="style.css" />
6 </head>
7 <style>
8 html {
9   background-color: #90AF8C;
10 }
11 body {
12   margin: 1;
13   background-color: #90AF8C;
14   font-family: Arial,sans-serif;
15   color: #DAEBD8;
16 }
17 ul {
18   background-color: #AFD5AA;
19   color: #023201;
20 }
21 li {
22   background-color: #AFD5AA;
23   color: #023201;
24 }</style>
25 <body>
26 <h1>Affordable and Clean Energy</h1>
27 <p>Here's a list of energy sources that are affordable and have
28 minimal impact on the Earth.</p>
29 <body>
30 <h2>Solar Energy</h2>
31 
32 <p>We can generate electricity by absorbing energy from the
33 sun through solar panels.</p>
34 <ul>Benefits
35 <li>Sun is 'endless' and can't run out</li>
36 <li>Solar panels can be placed on buildings to save
37 space</li>
38 </ul>
39 <ul>Drawbacks
40 <li>Need a sunny climate</li>
41 <li>Expensive and take up a lot of space</li>
42 </ul>
43 <h2>Wind Energy</h2>
44 
45 <p>Wind can be used to turn turbines to generate electricity.
46 </p>
47 <ul>Benefits
48 <li>Wind is also 'free and limitless'</li>
49 <li>Infrastructure is long-lasting</li>
50 </ul>
51 <ul>Drawbacks
52 <li>Need a lot of land</li>
53 <li>Can block views</li>
54 <li>Potentially disturb avian wildlife</li>
55 </ul>
56 </body>
57 </html>
```

How can I contact the Tynker support team?

If you have any issues or questions, send us an email at support@tynker.com.