

Unit 7.6 CS: How can we design solutions to help our communities be more resilient to changes in Earth's system?

(Earth's Resources and Human Impact + Computer Science)

Changes between Public Release unit and Computer Science field test unit

Modifications to individual lessons are summarized in the table below:

Revision Lesson	Field Test Lesson and changes made
Lesson 1	Videos of two sites replaced with images from multiple sites also featured in Lesson 2, to focus more on student observations.
Lesson 2	A Career Connections video featuring an NCEI scientist replaces the <i>About the Data</i> handout. StoryMaps data and format updated (with more information about community responses), and progress tracker modified to focus students more on solutions.
Lesson 3	A day was added to introduce micro:bits, Makecode, and three sensors (temperature, humidity, and soil moisture). Micro:bit and associated sensors used in temperature and evaporation lab, which was also modified to promote reliability (e.g., heat lamp instead of hand warmers, sand instead of standard soil, and the micro:bits automatically convert relative humidity from the sensor to absolute humidity).
Lesson 4	No significant changes.
Lesson 5	Shortened to one day, with explanations replaced with developing a flowchart to represent code, similar to the cause and effect model that is developed. A Career Connections video helps solidify students' ideas about climate and extends their thinking about modeling.
Lesson 6	No significant changes.
Lesson 7	No significant changes.
Lesson 8	Shortened to one day, with a Career Connections video to strengthen the ideas students figure out in the lesson.
Lesson 9	Micro:bit and CO ₂ sensor used in demonstration, and a Career Connections video with a hardware engineer added.
Lesson 10	A day was added to introduce radio functionality for micro:bits and give students an opportunity to propose modifications to code. Career Connections videos featuring a data scientist and network engineer support students' thinking when using data on Tuva and micro:bits, respectively.
Lesson 11	Minor modifications to support teaching without prior use of unit 7.5. Micro:bits incorporated into Carbon Dice Game and instruction cards modified to more closely resemble flowcharts and incorporate language used in programming.
Lesson 12	No significant changes.
Lesson 13	No significant changes.

Lesson 14	Public release Lesson 16. No significant changes besides revised navigation. The carbon footprint activity is left as an extension at the end of Lesson 13, but the full class calculation that was in old Lesson 14 has been removed to allow for more time developing community-level solutions.
Lesson 15	No significant changes.
Lesson 16	New two-day lesson in which students engage with water solution cards (previously in Lesson 17), develop a need for water pumps, and modify and test micro:bit-water pump systems for different applications.
Lesson 17	Project revamped so that students focus on using micro:bits to develop an idea or tool to support one of the water or carbon solutions in their community.
Lesson 18	Now optional, with the “Tweet Blizzard” and new Driving Question Board development replaced with an additional opportunity for students to share their project.