

02_Unit 2 Web Development

Content Area: **Math**
Course(s):
Time Period: **Cycle**
Length: **7 lessons (22 lesson marking period cycle; 1 of 3 units)**
Status: **Published**

General Overview, Course Description or Course Philosophy

Computer Programming 7

Computer science and design thinking education prepares students to succeed in today's knowledge-based economy by providing equitable and expanded access to high-quality, standards-based computer science and technological design education. During 7th grade, students will focus on the core ideas of computing systems, networks, impacts of computing and data analysis, programming, engineering design, ethics and culture of technology, and the interaction and effects of technology with and on humans and the natural world. They do so by completing three specific units entitled "Problem Solving and Computing", "Web Development", and "Interactive Animation and Games".

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

Unit Summary:

Human population, patterns and movement focus on the size, composition, distribution, and movement of human populations and how they are fundamental and active features on Earth's surface. This includes understanding that the expansion and redistribution of the human population affects patterns of settlement, environmental changes, and resource use. Patterns and movements of population also relate to physical phenomena including climate variability, landforms, and locations of various natural hazards and their effects on population size, composition, and distribution. Many of engineering and technology's impacts on society and the environment are widely regarded as desirable. However, other impacts are regarded as less desirable. Effects of Technology on the Natural World concerns the positive and negative ways that technologies affect the natural world.

Essential Question(s):

- How can computers help people solve problems?
- How does society and changes in population, environment, and culture dictate technology needs?
- How can websites be developed to cater to needs of people in various geographical locations?

Enduring Understandings:

- Technology advances through the processes of innovation and invention which relies upon the imaginative and inventive nature of people.
- Sometimes a technology developed for one purpose is adapted to serve other purposes.
- Engineers use a systematic process of creating or modifying technologies that is fueled and constrained by physical laws, cultural norms, and economic resources. Scientists use systematic investigation to understand the natural world.
- Resources need to be utilized wisely to have positive effects on the environment and society.
- Some technological decisions involve trade-offs between environmental and economic needs, while others have positive effects on both the economy and the environment.

CONTENT AREA STANDARDS

CS.6-8.8.2.8.NT.1	Examine a malfunctioning tool, product, or system and propose solutions to the problem.
CS.6-8.8.2.8.NT.2	Analyze an existing technological product that has been repurposed for a different function.
CS.6-8.8.2.8.NT.3	Examine a system, consider how each part relates to other parts, and redesign it for another purpose.
CS.6-8.8.2.8.NT.4	Explain how a product designed for a specific demand was modified to meet a new demand and led to a new product.
CS.6-8.8.2.8.ETW.1	Illustrate how a product is upcycled into a new product and analyze the short- and long-term benefits and costs.
CS.6-8.8.2.8.ETW.2	Analyze the impact of modifying resources in a product or system (e.g., materials, energy, information, time, tools, people, capital).
CS.6-8.8.2.8.ETW.3	Analyze the design of a product that negatively impacts the environment or society and develop possible solutions to lessen its impact.
CS.6-8.8.2.8.ETW.4	Compare the environmental effects of two alternative technologies devised to address climate change issues and use data to justify which choice is best.

RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)

LA.RI.7.10	By the end of the year read and comprehend literary nonfiction at grade level text-complexity or above, with scaffolding as needed.
LA.L.7.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

WRK.K-12.P.4	Demonstrate creativity and innovation.
WRK.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
WRK.K-12.P.8	Use technology to enhance productivity increase collaboration and communicate effectively.
TECH.9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).
TECH.9.4.2.CT.3	Use a variety of types of thinking to solve problems (e.g., inductive, deductive).

STUDENT LEARNING TARGETS

Refer to the 'Declarative Knowledge' and 'Procedural Knowledge' sections.

Declarative Knowledge

Students will understand that:

- Web pages are developed in a variety of languages and through various platforms.
- A successful programmer understands the importance of being able to balance design, patience, and precision. A successful programmer is also able to frame problems effectively.
- Programmers think critically about the impact of sharing information online and work to become more critical consumers of content.
- Human population, culture and demographic shifts, and environment changes lead to innovate ways to use technology in different modalities.

Procedural Knowledge

Students will be able to:

- View computer science as a form of expression.
- See themselves as creators and not simply consumers of online content.
- Consider the impact of the choices they make when creating and consuming digital content.
- Problem solve as it relates to programming.
- Debug, comment, and structure a programming language.
- Identify innovative technologies that responded to consumer needs in the environment, culture, and ever changing population.

EVIDENCE OF LEARNING

Refer to the 'Formative Assessments' and 'Summative Assessments' sections.

Formative Assessments

For this unit, formative assessments may include:

- observation
- one-on-one assistance
- questioning skills
- graphic organizers
- anecdotal notes
- exit tickets
- student interviews and check-ins

Summative Assessments

For this unit, summative assessments may include:

- graphic organizers
- homework, when applicable
- mini projects at the end of units
- culminating activities in the code.org units

RESOURCES (Instructional, Supplemental, Intervention Materials)

[Code.org Website](https://code.org)

All lessons and resources can be accessed via this website.

INTERDISCIPLINARY CONNECTIONS

English/Language Arts - implementation of conventions of Standard English

Technology/Multi-Media - audio/visual media analysis

Math - computations

Visual and Performing Arts- presentations on app lab and website design

Social Studies - ethical codes of components of technology

Science- computer science, physics

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.