

Coding C.H.O.M.P.

Choose Healthy Options for Max Potential



Instructional Time:
50 minutes

Introduction

CHOMP (Choose Healthy Options for Max Potential) wants to be *big*! This coding lesson introduces students to coding while connecting cause-effect thinking with prior knowledge about healthy food choices. In a custom-designed Scratch game, students will observe how code that is written to represent healthy foods causes the sprite, or character, to grow bigger and faster. They will then use their observations to identify code that represents how unhealthy foods cause the character to slow down. Finally, students will create and test code that shows a consequence for the character when it eats unhealthy foods. While this lesson is designed to follow the AVID STEM Connections lesson *Giddyup to Go, Slow, and Whoa!*, no prior teacher experience with coding is needed!

This is a sample STEM Connections lesson. Please find more information at <https://explore.avid.org/experience-avid/stem-connections>

Essential Question

How can we code a video game that teaches kids to make healthy food choices and understand the consequences of unhealthy food choices?

Lesson Objectives

Students will:

- Make observations to draw conclusions about how a coding problem is solved.
- Create code to solve a problem.

Materials and Resources

Resources below are available in additional formats such as Microsoft and PDF with a subscription to AVID STEM Connections. Links provided below are in a Google format. (If another format is needed, please contact cskeen@avid.org)

Hands-on:

- [CHOMP Presentation](#)
- [CHOMP Interactive Scratch Program](#)
- [CHOMP Recording Sheet](#)
- [Scratch Account Information for Teachers](#)
- Device access for the Scratch program

Minds-on:

- Growth mindset
- Self-efficacy

Design Thinking:

This lesson explores the indicated stages in the design thinking process:

- Empathize
- Define
- Ideate
- Prototype
- Test

Standards and Goals:

Common Core State Standards:

- ELA-LITERACY.W.3.2.A – Introduce a topic and group related information together; include illustrations when useful to aid comprehension.

International Society for Technology in Education Standards:

- 1.3d – Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories, and pursuing answers and solutions.

Next Generation Science Standards:

- 3-5-ETS1-3 – Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

UN Sustainable Development Goals:

- Goal 3 – Good Health and Well-Being: Ensure healthy lives and promote well-being for all at all ages.

- Planning and organizational skills
- Anticipating and evaluating the consequences of one’s actions

Teacher Preparation

- Make copies of (or distribute electronically through a learning management system) the [CHOMP Recording Sheet](#) student resource (1 per student).
- Visit the [CHOMP Interactive Scratch Program](#) and spend a few minutes playing the game to familiarize yourself with the program.
- Arrange the students into partnerships for collaborative activities throughout the lesson.
- Link the [CHOMP Interactive Scratch Program](#) in your learning management system (LMS) for easy student access.
- If your students have not yet been introduced to the MyPlate nutrition guidance, consider completing one or more activities from <https://www.myplate.gov/life-stages/kids> prior to conducting this lesson.
- Preview the videos in the [CHOMP Presentation](#) to determine whether watching them would be beneficial for your students. Experienced “Scratchers” may not need this scaffold.
- **Optional:** Students will be able to work within Scratch and make changes to the program; however, if they want to save their modified versions to share beyond the classroom through links or a class studio, they will need a free Scratch account. More information about types of Scratch accounts is available in the [Scratch Account Information for Teachers](#) resource.

Essential Question: *How can we code a video game that teaches kids to make healthy food choices and understand the consequences of unhealthy food choices?*

ENGAGE (5 minutes)

Introduction to Healthy Eating:

Display *Healthy Eating* (Slide 2) and guide students in building **empathy** and understanding the problem by facilitating a brief discussion using the question sequence below.

- What do we know about healthy eating?

Resources:

[CHOMP Presentation](#)
[CHOMP Interactive Scratch Program](#)

(Students may respond that there are different food groups, that MyPlate helps people plan to eat healthily, that healthy food makes you grow and feel good.)

- What do we know about eating unhealthy foods?
(Students may respond that eating unhealthy foods can make your body not work as it should, that a “sugar rush” might make you feel good for a minute but then makes you feel tired, that unhealthy foods often taste good.)
- What does it mean to make healthy food choices?
(Students may respond that it’s often easier to get unhealthy food, so we have to make a conscious decision to eat healthy food instead.)
- How can we help kids learn to make healthy food choices?
(Students may suggest a variety of ideas. If no student suggests playing a game to help kids practice making healthy food choices, suggest it yourself.)

EXPLORE (15 minutes)

CHOMP Scratch Overview:

Display *CHOMP Scratch Overview* (Slide 3) and have students click the link on their own devices to access the game.

Explain that this short game is designed to help kids learn about the food groups on MyPlate. Point out the Instructions section and read the information:

CHOMP (Choose Healthy Options for Max Potential) wants to be big! To gain speed and size, fill the healthy foods bar by choosing the best food options. Stay away from unhealthy foods!

Display *CHOMP Scratch Overview* (Slide 4).

Tell students to play the game to see how it works. After 3–4 minutes, all students should have been able to win the game. Game instructions:

- Click the green flag and then the SPACE bar to get started.
- Use arrow keys to move CHOMP to touch the foods he needs to eat.
- Fill the plate with the right kinds of foods needed to grow.

Ask students to make some observations about the game.

- What did you notice about this game? (Answers will vary.)

Resources:

[CHOMP Presentation](#)

[CHOMP Interactive Scratch Program](#)

[CHOMP Recording Sheet](#)

Devices to access Scratch

Teacher Tip:

If your students are new to coding, the video on Slide 4 provides an overview of this Scratch game, including the locations of important features.

- How does the game help kids learn about the different sections of MyPlate? (There are two types of food that can fill each MyPlate section in the game. You have to fill all the sections to level up.)
- How does the game help kids learn that eating healthy foods makes them grow? (Eating unhealthy foods *does not* fill the plate or help CHOMP grow. Eating healthy foods *does* fill the plate and help CHOMP grow.)
- What did you notice about CHOMP as he filled the plate with healthy foods? (He grew bigger and moved faster on each level.)
- What would make this game even better for helping kids learn about making healthy food choices? (Answers will vary. Guide students to suggest that eating unhealthy foods should have some consequences for CHOMP, just like eating unhealthy foods has consequences for us.)

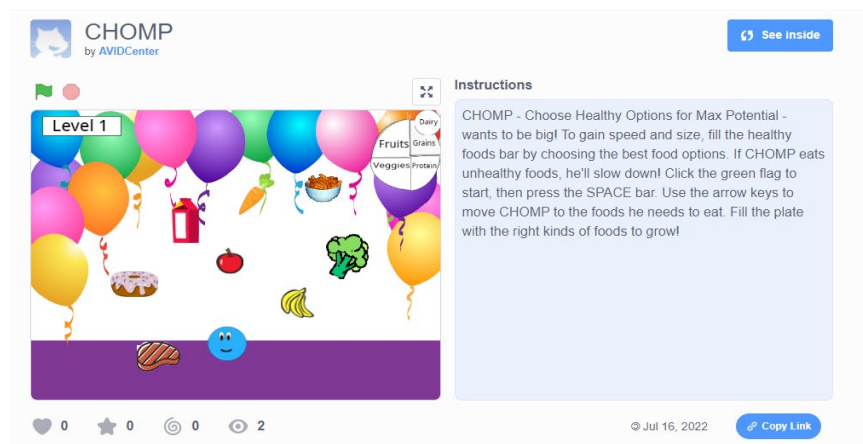
Summarize the discussion to **define** the problem. Defining the problem is often a difficult step of the design thinking process for students to grasp. A good template for defining a problem is “*Who needs what so*”:

[End User] needs [Big-picture solution to the problem] so they can [Desired outcome] .

Tell students they will make observations about how this game is built by seeing inside the project and looking at the code so that they can make the game better. Students will need to modify the Scratch game by adding an event to show a negative consequence for eating unhealthy foods. This will help remind them to make healthy food choices of their own.

Display *Event Blocks in CHOMP* (Slide 5), which introduces Event blocks and explains the challenge. Watching the video is optional, depending on whether it would be helpful for your students.

Tell students to click “See Inside” at the top right of the screen.



Distribute one copy of the *CHOMP Recording Sheet* to each student or have them access the document in your learning management system (LMS). Students will have 5 minutes to explore the coding blocks in the game.

EXPLAIN (10 minutes)

Ideate:

Ask several students to share blocks they noticed. (Answers may include that differently colored blocks have different functions—for example, blue blocks cause motions.) You may choose to use the following prompts to guide the discussion:

- How can I add a sound to the game?
- How can I change the way a sprite looks?
- How can I make a sprite move?

Ask students to talk with their partners to **ideate** (generate ideas about) a possible solution. What blocks could you use to show a consequence of eating unhealthy foods?

Display Criteria (Slide 6) and tell students that they will **prototype** and **test** their solutions within the *CHOMP* game. They will need to use a “When I receive” block and choose *unhealthy* from the drop-down menu, and then add other blocks to it to create their solutions. Make sure that the CHOMP sprite is selected when the blocks are added.



Resources:

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Devices to access Scratch

Teacher Tip:

An easy way to test what blocks do is to drag them into the workspace and click on them. This way, you can test a block without altering the rest of the code.

ELABORATE (10 minutes)

Prototype and Test:

Remind students that a large component of coding is creating and testing solutions. If a solution does not work well at first, try it again in a slightly different way before abandoning the idea altogether: this is an example

Resources:

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[CHOMP Recording Sheet](#)

of a growth mindset. If the code becomes hopelessly incorrect, students can exit the screen and click the Scratch link again to start fresh.

Display Criteria (Slide 6) as students work with their partners. Several possible solutions are shown on the next page.

- Slow CHOMP by making him move slowly out of his way.



- Create and change to a costume with an unhappy face and make CHOMP wait one second before changing back to normal.



- Play a sound. Make sure to select “Play until done to slow CHOMP during the sound effect.



- Change CHOMP’s size by a negative number so it takes him longer to move around. *An understanding of negative numbers is not needed at this stage. Rather, think of it as subtracting a number from his current size.*

Devices to access Scratch

Teacher Tip:

If your students are new to Scratch, encourage them to find a solution and record it, then explore other features and changes. If your students are experienced Scratchers, challenge them to design a new food sprite and copy from the existing code to make it work.



EVALUATE (10 minutes)

Reflection:

Display *Reflection* (Slide 7) and allow students to share their solutions using the questions on the slide. They can do this through a Pair–Square–Share (one set of partners sharing with another set of partners). They can also share a link to their solution with other students in the class LMS.

Remind students of the criteria as they share their solutions: Use an Events block and cause a consequence of eating unhealthy foods.

Ask students to complete their CHOMP conclusions on the second page of the *CHOMP Recording Sheet* with ideas for making the game even better.

Resources:

[CHOMP Presentation](#)

[CHOMP Interactive Scratch Program](#)

[CHOMP Recording Sheet](#)

Devices to access Scratch

VOCABULARY

- **Consequence:** A result or effect of an action or condition
- **Ideate:** To generate ideas for a possible solution
- **Sprite:** A character that can be moved or changed in a coding program

Vocabulary slides are included in the Presentation that accompanies this lesson.

CAREER CONNECTIONS

- **Computer Programmers** write, modify, and test code scripts that allow computer software and applications to function properly.

Career Connections slides are included in the Presentation that accompanies this lesson.

- **Computer System Analysts** sometimes called systems architects, study an organization’s current computer systems and procedures and design improvements to them.
- **Nutrition Coaches** work with the general population to encourage healthy eating behaviors.
- **Software Developers** design, program, build, deploy, and maintain software using many different skills and tools.
- **Web Developers** create and maintain websites.

See the *Occupational Handbook of the Bureau of Labor Statistics* for specific career information:
<https://www.bls.gov/ooh/>

EXTENSIONS AND MODIFICATIONS

Lesson Extensions:

- **Coding:** Try designing a new sprite on the Scratch program! Choose a food group (for example, fruit). Right-click on a sprite in that group (for example, banana) and click duplicate. Banana2 will appear at the very bottom of the list of Sprites. Click your new sprite, then click the Costumes tab at the top left. At the bottom left, hover over the cat+ button and select the paint tool to draw your sprite or the search tool to select from one of the other sprite options. Once you have designed a new sprite, look at the code from a sprite in that food group and see if you can duplicate it. You can also modify it slightly.
- **Level Up:** Add a new backdrop to serve as the next level of the game. The tutorial video points out the steps needed to add or change the backdrop.

Lesson Modification:

- Grouping students strategically can change the dynamics of this lesson. Pairing students who have an advanced understanding of coding with students who may need more scaffolding could allow one partner to “drive” by modifying the code while the other student “navigates” to provide input on solutions. Alternatively, pairing advanced students with other advanced students may provide them with opportunities to dive deeper into coding. Students paired who both need scaffolding would need to work together to figure out solutions.

Resources:

[CHOMP Interactive Scratch Program](#)
Devices to access Scratch

LESSON CONNECTIONS

- **AVID STEM Connections – *Giddyup to Go, Slow, and Whoa!***
The *Giddyup to Go, Slow, and Whoa!* lesson introduces students to types of nutrients that support the body’s growth and development. This lesson is designed as foundational information for this *Coding CHOMP* lesson.

Consider using additional relevant lessons with your students to connect to their learning from this AVID STEM Connections lesson.