

Curso A

El Curso A ofrece el currículo de Ciencia de la Computación para lectores principiantes, alrededor de la edad de kínder. Los/as estudiantes aprenderán a programar usando comandos como los loops y los eventos. Las lecciones que se presentan en este curso, también les enseñarán a colaborar con otros/as de forma significativa, investigar diferentes técnicas de solución de problemas, perseverar al enfrentar tareas difíciles y aprender acerca de la seguridad en internet. Hacia el final del curso, los/as estudiantes crearán su propio juego o historia, que podrán compartir desde el Play Lab

Chapter 1: Ciudadanía Digital

Lección 1: Safety in My Online Neighborhood

Unplugged | Online Safety

Learn how to go places safely online.

Chapter Commentary

Ciudadanía Digital

Chapter 2: Secuencia

Lección 2: Aprender a Arrastrar y Soltar

Skill Building | Sequencing

Click and drag to finish the puzzles.

Lección 3: Happy Maps

Unplugged | Sequencing

Write instructions to get the Flurb to the fruit.

Lección 4: Sequencing with Scrat

Skill Building | Sequencing

Program Scrat to reach the acorn.

Lección 5: Programming with Scrat

Skill Building | Sequencing

Write programs to help Scrat reach the acorn.

Lección 6: Programming with Rey and BB-8

Skill Building | Sequencing

Help BB-8 collect the scrap metal.

Chapter Commentary

Secuencia

Chapter 3: Bucles

Lección 7: Happy Loops

Unplugged | Loops

Help the Flurb solve bigger problems using loops.

Lección 8: Loops with Scrat

Skill Building | Loops

Help Scrat cover more ground using loops.

Lección 9: Loops with Laurel

Skill Building | Loops

Help Laurel the adventurer collect the treasure underground.

Lección 10: Ocean Scene with Loops

Skill Building | Loops

Use loops and patterns to finish the images.

Chapter Commentary

Bucles

Chapter 4: Eventos

Lección 11: The Big Event Jr.

Unplugged | Events

Move and shout when your teachers presses buttons on a giant remote.

Lección 12: On the Move with Events

Create your own game or story.

Chapter Commentary

Eventos



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Lección 1: Safety in My Online Neighborhood

Sin conexión | Seguridad en línea

Descripción



This lesson was originally created by **Common Sense Education**.

The power of the internet allows students to experience and visit places they might not be able to see in person. But, just like traveling in the real world, it's important to be safe when traveling online. On this virtual field trip, kids can practice staying safe on online adventures.

Propósito

Common Sense Education created this lesson to teach students how they can go places safely online.

Agenda

Watch: My Online Neighborhood (5 min)

Key Vocabulary

Read: Safety, It Rules! (5 min)

Explore: Internet Field Trip (15 min)

Pause & Think Moment (15 min)

Aprendizaje Extendido

Ver en Code Studio

Objetivos

Los estudiantes podrán:

- Discover that the internet can be used to visit faraway places and learn new things.
- Compare how staying safe online is similar to staying safe in the real world.
- Explain rules for traveling safely on the internet.

Preparación

- ☐ Review instructional materials.
- ☐ Print handout(s) for each student.
- ☐ (Optional) Print poem poster for classroom display.

Enlaces

¡Importante! Haz una copia de los documentos que piensas compartir con los estudiantes.

Para los docentes

- **Safety in My Online Neighborhood: Lesson Slides** - Slide Deck
- **Safety in My Online Neighborhood: My Online Neighborhood** - Video de la lección (descargar)

Para los estudiantes

- **Safety in My Online Neighborhood: Safety: It Rules!** - Poem Poster [Hacer una copia ▼](#)
- **Safety in My Online Neighborhood: Pause and Think Moment** - Guía para el estudiante [Hacer una copia ▼](#)

Guía docente

Watch: My Online Neighborhood (5 min)

Key Vocabulary

- **online:** using a computer, phone, or tablet to visit a website or app
- **website or app:** a place you can visit on the internet

Ask: *What do you need to do to stay safe when you visit new places? (Slide 3)*

Invite students to respond. Answers will vary, but reinforce the following safety rules:

- Always go places with an adult.
- Don't wander off on your own.
- Talk only with people you know.

Say: *Today we're going to talk about how visiting places on the internet is a lot like visiting places in real life. Just like there are rules to keep safe when you visit new places in the world, there are ways to keep yourself safe online.*

Project Slide 4 and define **online** as *using a computer, phone, or tablet to visit a website or app.*

Show the **My Online Neighborhood** video on **Slide 5** and then ask: *What did Arms like about the internet? What kinds of things can he do on the internet?*

Invite students to respond. Sample responses:

- He likes to visit cool places.
- He can talk to his family and friends.
- He can learn lots of new things.
- He can create things on the internet.

Ask: *What three rules does Arms follow when he goes places online?*

Invite students to respond. Project **Slide 6** and reinforce the three main rules:

1. Always ask your parent (or adult you trust) first.
2. Only talk to people you know.
3. Stick to places that are just right for you.

Explain that sticking to places that are "just right" means making sure it is a site or app that is appropriate for kids, and that you have permission to be there.

Read: Safety, It Rules! (5 min)

Say: *Now we're going to learn a short poem to help us remember the rules for staying safe online. First I'll read the poem, and then we'll read it together.*

Project Slide 7 and model the poem actions as you read the poem aloud. This is a call-and-response poem with different actions that correspond to each of the three safety rules.

Read the poem aloud with your students. As the students read, they should follow along with the actions. The poem also works well to have one of the students playing the role of the teacher and having the class respond to him or her.

Safety, It Rules! By Jenny Pritchett

We need to be safe

Whenever we're online

So we follow these rules

To have a good time!

[Hold up 1 finger] *Always ask your parents first!*

[Hold up 2 fingers] *Only talk to people you know!*

[Hold up 3 fingers] *Stick to sites just right for you!*

And we'll be safe

Wherever we go!

Note: The **Poem Poster** is great to use for your weekly poem or as a consistent routine to kick off any computer or device time.

Explore: Internet Field Trip (15 mín)

Say: *The computer makes it possible for you to visit faraway places without ever leaving the classroom.*

Define a **website** as a place you can visit on the internet. (**Slide 8**) Explain to students that on the internet, they can visit websites or apps for real places, such as zoos and museums. These places may be far from where they live, but they can visit them online.

Choose a website to explore as a class. If you're not sure of a good one to explore, try one of the following:

- **The San Diego Zoo**
- **National Geographic Kids Explore the World**

Ask: *What's the first rule before turning on a device or opening up a website or app?*

Invite students to share, reminding them that they must always ask for permission from an adult before using a device or visiting a website or app.

Explore the website you selected with your class, allowing students to choose pages and activities that are most interesting to them. As you go through the site, point out how students are following the other two safety rules for going online: only talking to people they know, and sticking to places that are just right for them.

Note: If you are in the computer lab or have enough devices in your classroom, have students do the explorations individually or in pairs.

Ask students what they learned on their internet field trip. Also ask: *How did you follow the three safety rules when you visited the site?*

Pause & Think Moment (15 mín)

Say: *Today we talked about how the internet allows us to visit faraway places. We learned that traveling to new places on the internet is a lot like going places in real life. We also learned three important safety rules when visiting websites or apps.*

Distribute the **Pause & Think Moment** to each student. Read the directions aloud and allow students to complete the handout independently. (**Slide 9**)

Invite students to share their reflections with the class. Collect handouts to assess student learning.

Aprendizaje Extendido

Here are additional resources you can provide students to enhance their learning:

- **Family Activity**
 - **Family Tips**
-



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Lección 2: Aprender a Arrastrar y Soltar

Desarrollo de habilidades | Secuencia

Descripción

Esta lección le dará a los/as estudiantes una idea de qué esperar cuando vayan al laboratorio de computación. Comienza con una breve discusión introduciéndolos al comportamiento para el laboratorio de computación, luego avanzarán al uso del computador para completar desafíos online.

Propósito

The main goal of this lesson is to build students' experience with computers. By covering the most basic computer functions such as clicking, dragging, and dropping, we are creating a more equal playing field in the class for future puzzles. This lesson also provides a great opportunity to introduce basic computer hardware terminology, potentially including "mouse", "trackpad" or "touchscreen", depending on your devices.

Agenda

Actividad previa (10 min)

Behaving in the Computer Lab
Discuss

Preview Online Puzzles (5 min)

Actividad Principal (20 - 30 min)

Learn to Drag and Drop

Actividad de Cierre (5 - 10 minutos)

Journaling

Actividades de Extensión

Ver en Code Studio

Objetivos

Los estudiantes podrán:

- Recognize what is expected when students transition into the computer lab.
- Use appropriate terminology when referring to a computer mouse, trackpad, or touchscreen.

Preparación

- ☐ Create your own class section on Code.org and make sure every student has a card with their **passcode** on it.
- ☐ Make sure students will be able to access Lesson 2 from their devices. Consider whether you want to hide future lessons to prevent students from moving ahead too quickly.
- ☐ Have the school IT person add a quick link for your class section to the computer desktop.
- ☐ Review the Common Sense Education website for more online safety content.

Enlaces

¡Importante! Haz una copia de los documentos que piensas compartir con los estudiantes.

Para los estudiantes

- **Programación en Parejas** - Video para el estudiante

Guía docente

Actividad previa (10 min)

Behaving in the Computer Lab

Goal: This discussion will teach students what to expect and how to behave when they enter the computer lab.

Discuss

Have a good discussion around the computer lab expectations to make sure that students understand the rules. Some topics of discussion might include:

- Is running in the computer lab okay?
- How loudly should we walk when we are in the computer lab?
- What should you do if you get stuck on a puzzle?
- If you get frustrated, will it help to hit the computer?
- When we're about to go to the computer lab, how should we get ready?

Preview Online Puzzles (5 min)

Project a puzzle from lesson 2. Show the class how to click on the picture and place it in the correct spot by dragging and dropping. Purposely make mistakes such as clicking the background or dropping the image before it's at the right spot. Ask for help from volunteers in the class when you run into these problems.

💡 Discussion Goals:

- Use calm bodies in the lab
- Remember not to chew gum or candy
- Sanitize your hands
- Sit with your partner at one computer
- Make sure that the first "driver" can reach the mouse
- When you get frustrated, don't hit or shake the computer or monitor
- Follow the **20/20/20 - Website** rule
- How to deal with the **Wiggles** every 20-30 minutes (requires a free login on GoNoodle)
- Ask your partner before you ask the teacher
- Keep volume down so everyone else can hear their partners
- Use your journal for keeping track of feelings and solutions

Actividad Principal (20 - 30 min)

Learn to Drag and Drop

Goal: This will teach students how to use Code.org to complete online puzzles.

This stage was designed to give students the opportunity to practice hand-eye coordination, clicking, and drag & drop skills. Students will also play with sequence.

🎓 Take some time to explicitly teach how to click, drag, and drop. Take time to introduce the language around the devices students will be using when they work on the puzzles. If you have tablets, students will be using a *touch screen*. If you have laptops, they will likely be using a *trackpad*. Desktop computers like you might find in a lab will rely on the use of the *mouse*.

Place kids in pairs and have them watch the pair programming video as a class or at their stations. This should help students start off in the right direction.

🎓 Content Corner

Considering having students break down the steps of dragging and dropping and record them on the board. For example:

1. Move the arrow to the block.
2. Click and hold the mouse button.
3. Move the mouse.
4. Let go of the button.

Doing this will give students practice with creating an *algorithm*, which is a concept that will be explored in upcoming lessons.

🔗 Teachers play a vital role in computer science education and supporting a collaborative and vibrant classroom environment. During online puzzles, the role of the teacher is primarily one of encouragement and support. Online puzzles are meant to be student-centered, so teachers should avoid stepping in when students get stuck. Some ideas on how to do this are:

- Utilize pair programming whenever possible during the activity.
- Encourage students with questions/challenges to start by asking their partner.
- Unanswered questions can be escalated to a nearby group, who might already know the solution.
- Remind students to use the debugging process before you approach.
- Have students describe the problem that they're seeing. What is it supposed to do? What does it do? What does that tell you?
- Remind frustrated students that frustration is a step on the path to learning, and that persistence will pay off.
- If a student is still stuck after all of this, ask leading questions to get the student to spot an error on their own.

🔗 Teacher Tip

Show the students the right way to help classmates:

- Don't sit in the classmate's chair
- Don't use the classmate's keyboard
- Don't touch the classmate's mouse
- Make sure the classmate can describe the solution to you out loud before you walk away

Actividad de Cierre (5 - 10 minutos)

Journaling

Goal: Help students reflect on the things they learned in this lesson

Give the students a journal prompt to help them process some of the things that they encountered during the day.

Journal prompts could include:

- Draw one of the feeling faces that shows how you felt about today's lesson in the corner of your journal page.
- Can you draw a sequence for getting ready to go to the computer lab?
- Draw a computer lab "Do" and a "Don't"
 - Draw and label the name of the computer part you used when clicking and dragging during the puzzles. (mouse button, touch screen, trackpad)

Actividades de Extensión

Si los alumnos completan antes los desafíos de la Etapa 4, pídeles que pasen un tiempo tratando de crear sus propios desafíos en su **Diario Think Spot - Diario de reflexiones**.

Standards Alignment

Estándares para ciencias de la computación CSTA K-12 (2017)

- ▶ **AP** - Algoritmos y programación
- ▶ **CS** - Computing Systems
- ▶ **IC** - Impactos de la computación



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Lección 3: Happy Maps

Sin conexión | Secuencia

Descripción

Esta lección sin conexión, junta equipos que tienen la misma tarea: llevar el “flurb” a la fruta. Los/as estudiantes practicarán escribiendo instrucciones precisas mientras trabajan en la traducción de las instrucciones a los símbolos entregados. Si surgen problemas en el código, los/as estudiantes también deberían trabajar juntos/as para reconocer los “bugs” y crear soluciones.

Propósito

El puente que va desde los algoritmos a la programación puede ser corto si los/as estudiantes comprenden la diferencia entre planificar una secuencia y codificar esa secuencia en un lenguaje apropiado. Esta actividad ayudará a los/as estudiantes a ganar experiencia leyendo y escribiendo códigos abreviados.

Agenda

Actividad previa (5 min)

Step-by-Step

Actividad (40 min)

Happy Maps Programming

Students' Turn

Actividad de Cierre (8 min)

Aprendizaje Extendido

Ver en Code Studio

Objetivos

Los estudiantes podrán:

- Convertir un algoritmo en un programa
- Decodificar y ejecutar un programa creado por otra persona
- Identificar y corregir bugs o errores en instrucciones en secuencia

Preparación

- ☐ Print one **Happy Map Cards - Worksheet** and one **Happy Map Game Pieces - Manipulatives** per group of 2-3.
- ☐ Make sure each student has a **Think Spot Journal - Reflection Journal**.

Enlaces

¡Importante! Haz una copia de los documentos que piensas compartir con los estudiantes.

Para los docentes

- **Tarjetas de Mapas Felices** - Guía de respuestas en fichas [Hacer una copia ▼](#)

Para los estudiantes

- **Happy Maps** - Video sin conexión ([descargar](#))
- **Tarjetas de Mapas Felices** - Ficha [Hacer una copia ▼](#)
- **Piezas del Juego Mapa Feliz** - Manipuladores [Hacer una copia ▼](#)

Vocabulario

- **Algoritmo** - una lista de tareas para finalizar una tarea.
- **Depurar** - encontrar y solucionar problemas en un algoritmo o programa.
- **Programa** - un algoritmo que se ha programado como algo que puede ser ejecutado por una máquina.

Guía docente

Actividad previa (5 min)

Step-by-Step

This warm-up is meant to get the class thinking about how to break a big problem down into a list of individual steps.

Model: Start by asking the class for step-by-step directions on how to get to the chalkboard. Make sure that you ask students to break apart any large instructions, like "Walk to the chalkboard," into smaller instructions like "Step forward."

When you reach the board, ask for instructions to draw a smiley face and try to get them to keep their instructions equally small.

🗣️ **Say:** Well done! You just gave me a list of steps to finish a task. In computer science, that's called an Algorithm! [Follow up with your typical method of introducing vocabulary: word wall, repeat-after-me, etc.]

💡 Teaching Tip

If the class starts shouting simultaneously, explain that you can only hear one instruction at a time. Call on students individually if that helps.

Actividad (40 min)

Happy Maps Programming

In this exercise, the class will get map cards that have a pre-defined start space (Flurb) and end space (fruit). Students will need to get the Flurbs to the fruit on each card, using the arrows provided.

Model: Select one of the intermediate maps from the Happy Maps Cards worksheet (e.g., #3). Display it for the class and work through the puzzle together.

Have students look at the puzzle, then think-pair-share their solution for how they would get the Flurb to the fruit.

Think: This Flurb needs to take two steps to get to the fruit. Work with your elbow partner to decide what you think those two steps are.

Pair: Have students discuss with neighbors for about 90 seconds.

Share: Ask a few students to describe their algorithm to the class. Move your finger along the displayed map as the students read their steps. Once you have a solution, ask if anyone else came up with a different idea that also works.

Now, share with the students that the magic step of changing an algorithm into a "program" happens when the code is written down using symbols. Do the students see any symbols on the display?

Think: Challenge students to encode the algorithm that they came up with before into symbols, and to write those symbols down in their journals (or on a piece of paper.)

Pair: Once students have written down their symbols, ask them to swap with a partner to see if they can follow each others' instructions.

Share: Ask for volunteers to come draw their arrows on the board. If the original code doesn't work, spend some time debugging as a class. Students should be familiar with the idea of "debugging" from previous lessons, so be sure to use the vocabulary to get them comfortable with it.

Once the code has been successfully written on the board, congratulate the class on writing their first program together!

Students' Turn

Group: If your class is comfortable, place students into small groups of 2-3. Otherwise, you can continue solving these problems as a class and having them think-pair-share to write programs.

Distribute: Pass out one of the images from the **Happy Map Cards - Worksheet** to each group as needed. *(Optional)* If you start noticing that students are ready for more, use the provided **Happy Map Game Pieces - Manipulatives** and let students choose their own start and finish destinations on the blank map.

Encourage the students to follow these steps:

- Discuss an algorithm to get the Flurb to the fruit.
- Encode the algorithm into arrows in their journals.
- Try their code to see if everything works as expected.
- Debug any issues and fix their code until it works correctly.

Share: When the lesson is done, offer to let groups share out the most difficult maps that they solved. If you had time, ask them to share their solutions as well.

Actividad de Cierre (8 min)

Aprendizaje Extendido

Usa estas actividades para mejorar el aprendizaje de los alumnos. Se pueden usar como actividades fuera del aula u otros enriquecimientos.

Mapas de peluches

- Crea una grilla tamaño natural en la alfombra con cinta adhesiva y pide a los alumnos que traigan peluches a la escuela.
- Ahora los alumnos pueden programar a sus amigos para que muevan sus peluches como se indica en los programas.

Crear el tuyo propio

- Haz que los alumnos creen sus propios mapas.
- Haz que otros alumnos los solucionen usando programas.

Standards Alignment

Estándares para ciencias de la computación CSTA K-12 (2017)

- **AP** - Algoritmos y programación



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Lección 4: Sequencing with Scrat

Desarrollo de habilidades | Secuencia

Descripción

Using Scrat from the Ice Age franchise, students will develop sequential algorithms to move a squirrel character from one side of a maze to the acorn at the other side. To do this they will stack code blocks together in a linear sequence.

Propósito

En esta lección, los/as estudiantes desarrollarán las habilidades de programación y debugging en una plataforma computacional. El formato basado en bloques de estos desafíos ayuda a los /as estudiantes a aprender sobre la secuencia y los conceptos, sin tener que preocuparse de una sintaxis perfecta.

Agenda

Actividad previa (10 min)

Behaving in the Computer Lab

Actividad Puente - Arrastrar y Soltar (10 - 15 min)

Dragging and Dropping Algorithms

Previewing Online Puzzles as a Class

Actividad Principal (20 - 30 min)

Online Puzzles

Actividad de Cierre (5 - 10 minutos)

Journaling

Actividades de Extensión

Ver en Code Studio

Objetivos

Los estudiantes podrán:

- Model proper computer lab behaviors
- Experiment with standard block-based programming actions such as: clicking, drag and drop, etc.

Preparación

- ☐ Cut out direction blocks from **Unplugged Blockly Blocks (Grades K-1)** - **Manipulatives** to use with the Happy Maps bridging activity.
- ☐ Make sure each student has a journal.

Enlaces

¡Importante! Haz una copia de los documentos que piensas compartir con los estudiantes.

Para los estudiantes

- **Programación en Parejas** - Video para el estudiante
- **Bloques Blockly Sin Conexión (Cursos K-1)** - Manipuladores

Vocabulario

- **Clic** - presionar el botón del ratón.
- **Doble clic** - presionar el botón del ratón muy rápidamente.
- **Arrastrar** - hacer clic en el botón del ratón y mantenerlo presionado mientras se mueve el puntero a una nueva ubicación.
- **Soltar** - dejar de presionar el botón del ratón para "soltar" un elemento que estás arrastrando.

Guía docente

Actividad previa (10 min)

Behaving in the Computer Lab

Review expectations and how to behave when they enter the computer lab.

Discuss:

Have a good discussion around your computer lab expectations to make sure that students understand the rules. Some topics of discussion might include:

- Is running in the computer lab okay?
- How loudly should we walk when we are in the computer lab?
- What should you do if you get stuck on a puzzle?
- If you get frustrated, will it help to hit the computer?
- When we're about to go to the computer lab, how should we get ready?

Some possible things to cover:

- Use calm bodies in the lab
- Remember not to chew gum or candy
- Sanitize your hands
- Sit with your partner at one computer
- Make sure that the first "driver" can reach the mouse
- When you get frustrated, don't hit or shake the computer or monitor
- Follow the **20/20/20 - Website** rule
- How to deal with the **Wiggles** every 20-30 minutes (requires a free login on GoNoodle)
- Ask your partner before you ask the teacher
- Keep volume down so everyone else can hear their partners
- Use your journal for keeping track of feelings and solutions

Actividad Puente - Arrastrar y Soltar (10 - 15 min)

This activity will help bring the unplugged concepts from Happy Maps into the online world that the students are moving into. Choose *one* of the following to do with your class:

Choose *one* of the following to do with your class:

Dragging and Dropping Algorithms

Project one of the maps from the "Happy Maps" activity and display it for the students to see. On a projector or in front of the class, put some direction blocks from the **Unplugged Blockly Blocks (Grades K-1) - Manipulatives** in random order and practice "dragging and dropping" by pressing your finger on one of the paper pieces and moving it across the screen. Explain that you can "click" to select this block by tapping your finger on it, or you can "drag" the block by pressing your finger on it and moving it. To "drop" the block, release your finger.

After showing this to the class, ask for volunteers to create an algorithm for the Happy Map by "dragging and dropping" the necessary blocks.

Previewing Online Puzzles as a Class

Project a puzzle from the lesson. Show the class how to click on a block and place it in the correct spot by dragging and dropping. Purposely make mistakes such as clicking the background or dropping the image before it's at the right spot. Ask for help from volunteers in the class when you run into these problems, and help them use the skills that they developed in the last unplugged lesson to make things right.

Actividad Principal (20 - 30 min)

Online Puzzles

This will teach students how to use Code.org to complete online puzzles.

Watch the **Pair Programming - Student Video** with your students, then assign them to pairs. This should help students start off in the right direction.

Teachers play a vital role in computer science education and supporting a collaborative and vibrant classroom environment. During online activities, the role of the teacher is primarily one of encouragement and support. Online lessons are meant to be student-centered, so teachers should avoid stepping in when students get stuck. Some ideas on how to do this are:

- Utilize pair programming whenever possible during the activity.
- Encourage students with questions/challenges to start by asking their partner.
- Unanswered questions can be escalated to a nearby group, who might already know the solution.
- Remind students to use the debugging process before you approach.
- Have students describe the problem that they're seeing. What is it supposed to do? What does it do? What does that tell you?
- Remind frustrated students that frustration is a step on the path to learning, and that persistence will pay off.
- If a student is still stuck after all of this, ask leading questions to get the student to spot an error on their own.

Teacher Tip

Show the students the right way to help classmates:

- Don't sit in the classmate's chair
- Don't use the classmate's keyboard
- Don't touch the classmate's mouse
- Make sure the classmate can describe the solution to you out loud before you walk away

Code Studio levels

Maze Intro: Programming with Blocks

1

(click tabs to see student view)

Practice

2

3

4

5

6

7

(click tabs to see student view)

Actividad de Cierre (5 - 10 minutos)

Journaling

Give the students a journal prompt to help them process some of the things that they encountered during the day.

Journal Prompts:

- Can you draw a sequence for getting ready to go to the computer lab?
- Draw a computer lab "Do" and a "Don't"
- Draw one of the **Feeling Faces - Emotion Images** that shows how you felt about today's lesson in the corner of your journal page.

Actividades de Extensión

If students complete the puzzles from this lesson early, have them spend some time trying to come up with their own puzzles in their **Think Spot Journal - Reflection Journal**.

Standards Alignment

Estándares para ciencias de la computación CSTA K-12 (2017)

- AP - Algoritmos y programación



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Lección 5: Programming with Scrat

Desarrollo de habilidades | Secuencia

Descripción

Using characters from the Ice Age, students will develop sequential algorithms to move Scrat from one side of a maze to the acorn at the other side. To do this they will stack code blocks together in a linear sequence, making them move straight, turn left, or turn right.

Propósito

En esta lección, los/as estudiantes desarrollarán las habilidades de programación y debugging en una plataforma computacional. El formato basado en bloques de estos desafíos ayuda a los /as estudiantes a aprender sobre la secuencia y los conceptos, sin tener que preocuparse de una sintaxis perfecta.

Agenda

Actividad Previa: Cimiento Sin Conexión (3 min)

Review Unplugged Activity

Cimientos En Línea: Vista Previa de la Programación en el Laberinto (3 min)

Actividad Principal (30 min)

Online Puzzles

Actividad de Cierre (5 - 10 minutos)

Journaling

Aprendizaje Extendido

Ver en Code Studio

Objetivos

Los estudiantes podrán:

- Crear un programa mediante la reorganización de movimientos secuenciales
- Crear un programa informático a partir de un conjunto de instrucciones escritas
- Elegir las prácticas de depuración apropiadas a la hora de resolver problemas

Preparación

- ☐ Play through the puzzles to find any potential problem areas for your class.
- ☐ (Optional) Pick a couple of puzzles to do as a group with your class.
- ☐ Make sure each student has a **Think Spot Journal - Reflection Journal**.

Enlaces

¡Importante! Haz una copia de los documentos que piensas compartir con los estudiantes.

Para los estudiantes

- **Programación en Parejas** - Video para el estudiante

Vocabulario

- **Algoritmo** - una lista de tareas para finalizar una tarea.
- **Bug o error** - parte de un programa que no funciona correctamente.
- **Depurar** - encontrar y solucionar problemas en un algoritmo o programa.
- **Programa** - un algoritmo que se ha programado como algo que puede ser ejecutado por una máquina.
- **Programación** - el arte de crear un programa.

Guía docente

Actividad Previa: Cimiento Sin Conexión (3 min)

Review Unplugged Activity

💡 This lesson relies on many of the unplugged ideas that students have learned in the weeks leading up to this first online activity. It is important that you bring those concepts (such as persistence, debugging, algorithms, and programs) around full-circle so that your class can benefit from them in their online work as well.

Display: Show students map from the "Happy Maps" exercise that they completed in the lessons prior to this one.

Discuss: Ask students to recall the symbols used in "Happy Maps."

- What happens when the flurb reads the "North" arrow?
- What happens when the flurb reads the "East" arrow?
- What would happen if we made a mistake when programming the Flurb? What if there was a "bug" in our program? Would we throw the whole thing away and start over?

Encourage students to think about the debugging tips:

- Was everything right at the first step?
- How about the second?
- Where did it go wrong?

Transition: Once you are satisfied that your students remember "Happy Maps" and "Unspotted Bugs", you can move into the Bridging Activity.

Cimientos En línea: Vista Previa de la Programación en el Laberinto (3 min)

To prepare students, preview an online puzzle (or two) as a class.

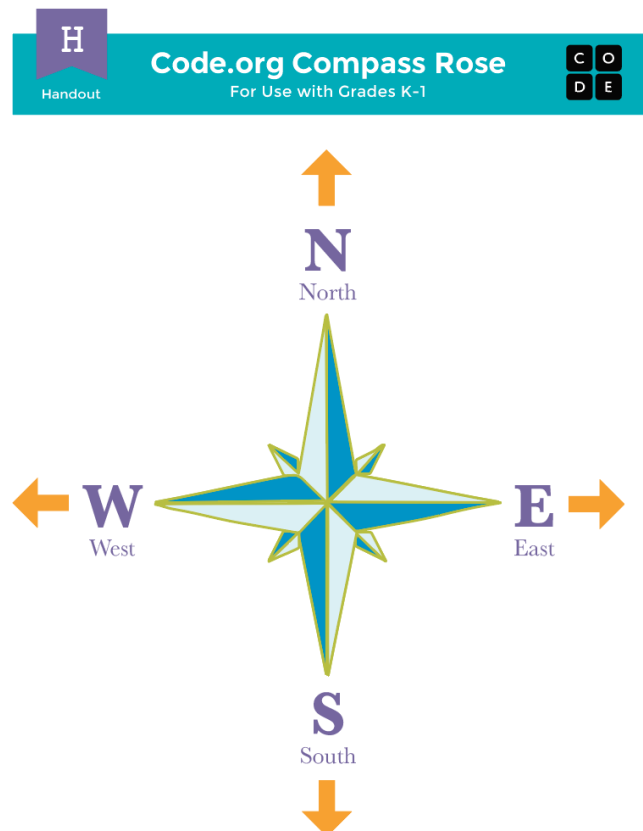
Model: Reveal an entire online puzzle from the progression to come. We recommend Lesson 5, Puzzle 5. Point out the "Play Area" with Scrat, as well as the "Work Space" with the Blockly code. Explain that this Blockly code is now the language that students will be using to get Scrat to the acorn. Do they see any similarities to the exercise that they just did? What are the big differences?

Work with your class to drag code into the workspace in such a way that Scrat (eventually) gets to the acorn.

Transition: Students should now be ready to transition to computers to complete online puzzles on their own.

💡 Teaching Tip

If your class has already learned cardinal directions, then changing "Up" and "Down" to "North" and "South" shouldn't be a problem. If they have not, we have provided a handy worksheet with the Code.org Compass Rose that you can use to get students onboard. This conversion will come in handy for nearly all of the online puzzles aimed at kindergarten and first grade.



Let students know that they will see those letters in their online programs next to the direction arrows.

Actividad Principal (30 min)

Online Puzzles

If you are looking for some extra puzzles to cover with your class, here are some "prediction" puzzles that will allow you to walk through existing code with your students to predict what Scratch will do. It is a good idea to cover them together before letting students loose on their own machines.

Prediction Levels:

- **Course B, Programming in Maze #1**
- **Course B, Programming in Maze #2**

Code Studio levels

Pair Programming

 1

(click tabs to see student view)

Practice

 2

 3

 4

 5

(click tabs to see student view)

Debugging with the Step Button

 6

(click tabs to see student view)

Practice

 7

 8

(click tabs to see student view)

Challenge

 9

(click tabs to see student view)

Practice

 10

 11

 12

(click tabs to see student view)

Levels

 Extra

 Extra

(click tabs to see student view)

Circulate: Teachers play a vital role in computer science education and supporting a collaborative and vibrant classroom environment. During online activities, the role of the teacher is primarily one of encouragement and support. Online lessons are meant to be student-centered, so teachers should avoid stepping in when students get stuck. Some ideas on how to do this are:

- Utilize **Pair Programming - Student Video** whenever possible
- Encourage students with questions/challenges to start by asking their partner
- Unanswered questions can be escalated to a nearby group, who might already know the solution
- Remind students to use the debugging process before you approach
- Have students describe the problem that they're seeing. What is it supposed to do? What does it do? What does that tell you?
- Remind frustrated students that frustration is a step on the path to learning, and that persistence will pay off
- If a student is still stuck after all of this, ask leading questions to get the student to spot an error on their own

Teacher Tip:

Show the students the *right* way to help classmates by:

- Don't sit in the classmate's chair
- Don't use the classmate's keyboard
- Don't touch the classmate's mouse
- Make sure the classmate can describe the solution to you out loud before you walk away

Actividad de Cierre (5 - 10 minutos)

Journaling

Having students write about what they learned, why it's useful, and how they feel about it can help solidify any knowledge they obtained today and build a review sheet for them to look to in the future.

Journal Prompts:

- Draw one of the **Feeling Faces - Emotion Images** that shows how you felt about today's lesson in the corner of your journal page.
- Draw Scrat and an acorn somewhere on your paper. Can you write a program to get to get Scrat to the acorn?

Aprendizaje Extendido

En grupos pequeños, permite que los alumnos diseñen sus propios laberintos en papel y que desafíen a otros grupos a escribir programas para resolverlos. Para agregar diversión, haz laberintos en tamaño real con alumnos como el pájaro y el cerdo.

Standards Alignment

Estándares para ciencias de la computación CSTA K-12 (2017)

- **AP** - Algoritmos y programación



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Lección 6: Programming with Rey and BB-8

Desarrollo de habilidades | Secuencia

Descripción

En esta lección, los/as estudiantes usarán sus nuevas habilidades de programación de formas más complejas para navegar un curso difícil con BB-8.

Propósito

Con la transferencia de conocimiento en mente, esta lección da a los/as estudiantes un nuevo ambiente para practicar las habilidades que han cultivado. Los/as fanáticos/as de Star Wars saltarán de alegría cuando vean estos desafíos. Cada desafío en esta serie ha sido agregado para entregar una mejor comprensión de los conceptos básicos que usarán en todo el resto del curso.

Agenda

Actividad previa (15 mín)

Introducción

Actividad Principal (30 min)

Online Puzzles

Actividad de Cierre (15 mín)

Journaling

Ver en Code Studio

Objetivos

Los estudiantes podrán:

- Secuenciar comandos en un orden lógico.
- Reconocer problemas o "bugs" en un programa y desarrollar un plan para resolverlos.

Preparación

- ☐ Play through the puzzles corresponding with this lesson to find any potential problem areas for your class.
- ☐ Review **CS Fundamentals Main Activity Tips - Lesson Recommendations**.
- ☐ Make sure every student has a **Think Spot Journal - Reflection Journal**.

Enlaces

¡Importante! Haz una copia de los documentos que piensas compartir con los estudiantes.

Para los estudiantes

- **Programación en Parejas** - Video para el estudiante

Vocabulario

- **Algoritmo** - una lista de tareas para finalizar una tarea.
- **Bug o error** - parte de un programa que no funciona correctamente.
- **Depurar** - encontrar y solucionar problemas en un algoritmo o programa.
- **Programa** - un algoritmo que se ha programado como algo que puede ser ejecutado por una máquina.
- **Programación** - el arte de crear un programa.

Guía docente

Actividad previa (15 mín)

Introducción

Pregunte a los alumnos cómo se sintieron en la última lección.

- ¿Qué desafíos fueron muy difíciles o muy fáciles?
- ¿Qué desafíos fueron frustrantes o muy divertidos?
- Si tuvieran que enseñarle la lección a un amigo, ¿Qué parte de la lección querrían revisar?

Use estas preguntas para formar una breve revisión de la programación y debugging. Si cree que la clase podría beneficiarse, puede revisar las palabras de vocabulario y las definiciones de la última lección.

Si se siente cómodo, también haga una breve introducción al BB-8 de Star Wars. Muchos alumnos pueden estar familiarizados con el adorable robot, pero la introducción seguramente creará entusiasmo.

Actividad Principal (30 min)

Online Puzzles

 Code Studio levels

Programming with Rey and BB-8

 1

(click tabs to see student view)

Practice

 2

 3

 4

 5

 6

 7

 8

(click tabs to see student view)

Challenge

 9

(click tabs to see student view)

Practice

 10

 11

 12

(click tabs to see student view)

As we mentioned in the last lesson, we highly recommend viewing and using **Pair Programming - Student Video** as a class. Pair programming stimulates a discussion that can answer questions, review basic concepts, and build confidence with the subject.

Actividad de Cierre (15 mín)

Journaling

Having students write about what they learned, why it's useful, and how they feel about it can help solidify any knowledge they obtained today and build a review sheet for them to look to in the future.

Journal Prompts:

- What was today's lesson about?
- Draw one of the **Feeling Faces - Emotion Images** that shows how you felt about today's lesson in the corner of your journal page.
- Draw a picture of BB-8 you guided through the maze today and add a list of the commands that you used.

Standards Alignment

- **AP** - Algoritmos y programación



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Lección 7: Happy Loops

Sin conexión | Bucles

Descripción

Esta actividad revisita los Mapas Felices. Esta vez, el/a estudiante resolverá desafíos más grandes y largos con sus códigos, llevándolos/as a ver la utilidad de las estructuras que les permitan escribir códigos de una manera más fácil.

Propósito

Esta lección sirve como una introducción a los loops. Los loops les permiten a los/as estudiantes simplificar sus códigos agrupando comandos que necesitan ser repetidos. Los/as estudiantes desarrollarán habilidades de pensamiento crítico notando la repetición en los movimientos de sus compañeros/as y determinando cuántas veces repetir los comandos. Al ver “Mapas Felices” nuevamente, los/as estudiantes podrán relacionar viejos conceptos como la secuenciación al nuevo concepto de loops repetir.

Agenda

Actividad previa (5 min)

Revisión de Los Mapas Felices

Actividad Principal (20 min)

Happy Loops

Actividad de Cierre (8 min)

Actividades de Extensión

Ver en Code Studio

Objetivos

Los estudiantes podrán:

- Identificar código repetitivo y sintetizar varias acciones en un solo bucle.
- Interpretar un programa con bucles como una serie de acciones.

Preparación

- ☐ Print out a **Happy Map Cards - Worksheet** to display for the class
- ☐ Per each group of 2-3, print one of each: **Happy Map Game Pieces - Manipulatives**, **Happy Map Cards XL - Worksheet**, and **Happy Map Game Pieces Bonus Pack - Manipulatives**.
- ☐ Make sure each student has a **Think Spot Journal - Reflection Journal**.

Enlaces

¡Importante! Haz una copia de los documentos que piensas compartir con los estudiantes.

Para los estudiantes

- **Tarjetas de Mapas Felices** - Ficha [Hacer una copia ▼](#)
- **Tarjetas XL Mapa Feliz** - Ficha [Hacer una copia ▼](#)
- **Piezas del Juego Mapa Feliz** - Manipuladores [Hacer una copia ▼](#)
- **Pieza Juego Mapa Feliz Bonus Pack** - Manipuladores [Hacer una copia ▼](#)

Vocabulario

- **Bucle** - la acción de hacer algo una y otra vez.
- **Repetir** - hacer algo de nuevo.

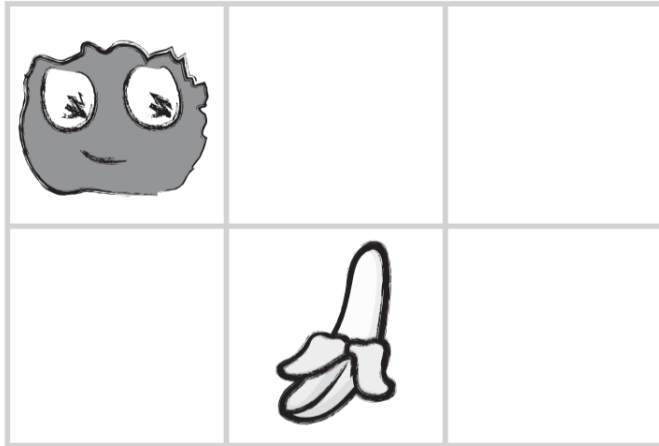
Guía docente

Actividad previa (5 min)

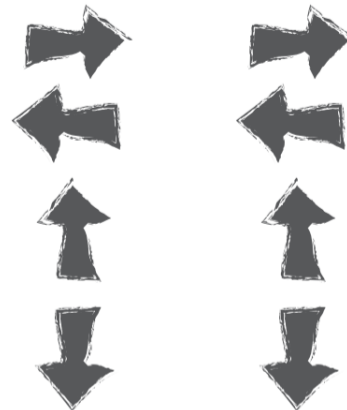
Revisión de Los Mapas Felices

Esta lección se basa en la actividad de Los Mapas Felices de principios de año. Los alumnos podrían beneficiarse de un repaso rápido antes de entrar en asuntos difíciles.

Mostrar:



Which two ways should the Flurb step to get to the supplies?



Modelar: Seleccionar uno de los mapas que tu clase estudió en la última lección.

Pide a los alumnos que miren el desafío, luego piensen y compartan en pareja su solución sobre cómo llevar al Flurb hasta la fruta (usando los símbolos de la última vez).

Pensar: ¿Recuerdan haber escrito programas para llevar a los Flurbs hasta la fruta? ¿Cómo luciría este programa codificado con flechas?

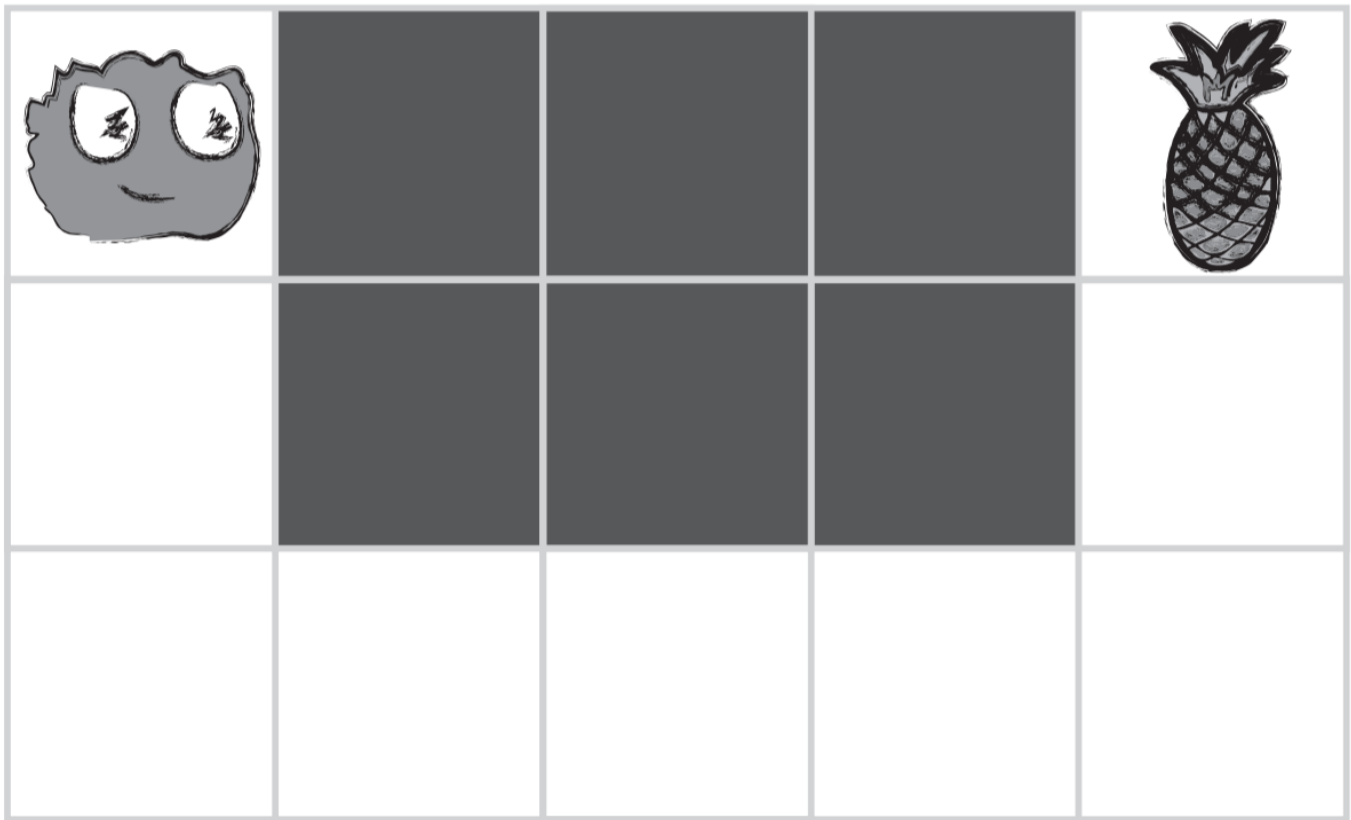
Parejas: Pide a los alumnos que debatan por 90 segundos.

Compartir: Pide a los alumnos que usen sus dedos para apuntar en la dirección de las flechas que escogieron para resolver este desafío.

Actividad Principal (20 min)

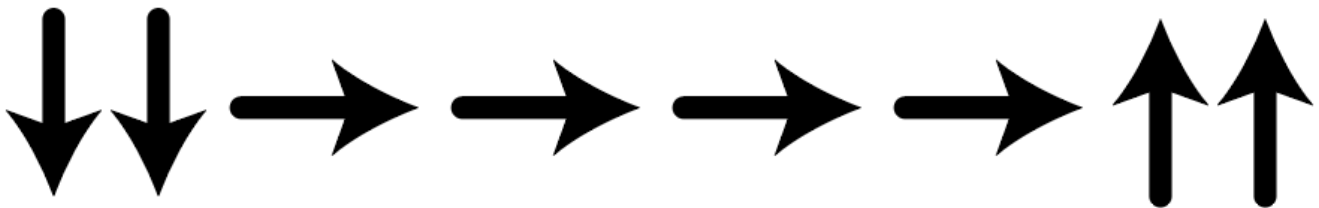
This portion of the lesson should help students see that there is an easier way to handle repetitive code than to brute force a solution with dozens of the same symbols.

Display:



Model: Once you are confident that your students remember Happy Maps, pull up one of the new -- and much longer -- *Happy Maps XL*.

Can your students help you program these maps? The resulting code might look something like this:



It's a bit longer, isn't it?

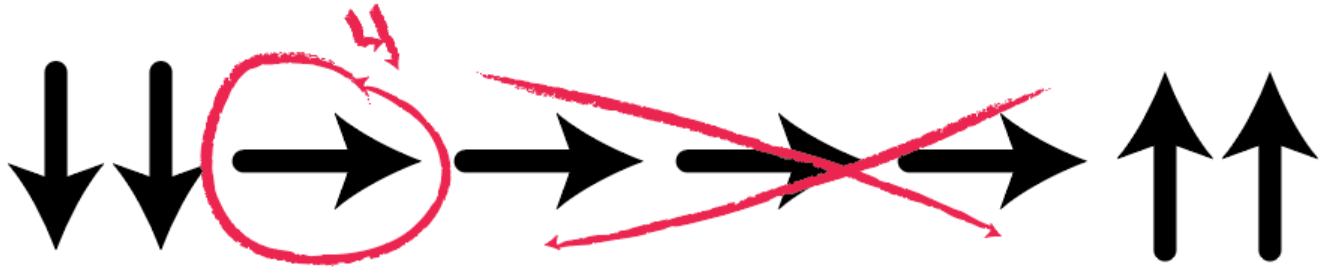
Discuss:

Give students the opportunity to brainstorm shorter ways to relay the code that they're creating. (This bit can be skipped over if your students start saying things like: "Move forward 6 times." Since that will open the discussion about how to show "six times" with symbols.)

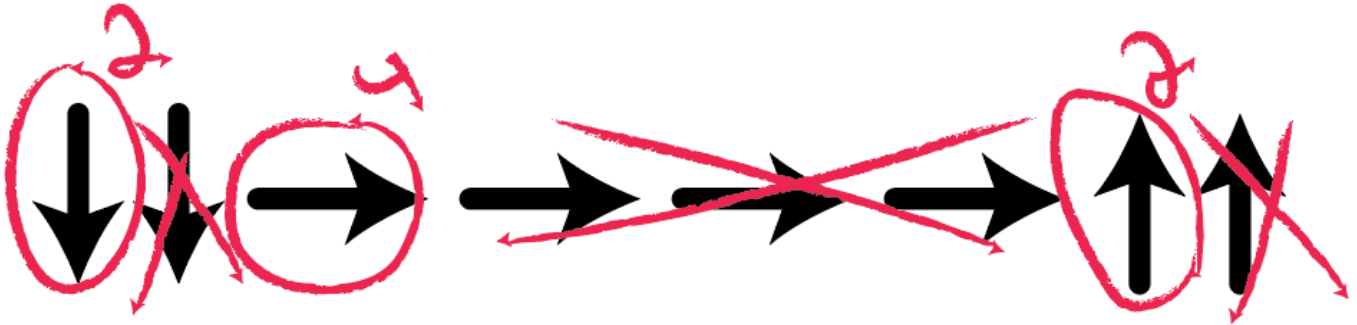
Discussion Goal

The point of this discussion is to get students to see that, sometimes, many symbols are repeated and they can lump all of those movements into a single icon.

Ideally, students will land on a method that looks like this one:



Which can be reduced even further to this:



Eventually, students can write programs like this on the fly:



Define: Once students have put together the idea of “repeating” code, give them the vocabulary around it. Make sure to share with them that often the terms “repeat something” and “loop something” will be used interchangeably in Code Studio.

Happy Loops

Now that students are familiar with the ability to repeat lots of code using a single loop, select an XL map and let them help you write code for the situation. Do this as many times together as a class as you need, then set students off in groups to solve some problems on their own. You may also need to add the **Pieza Juego Mapa Feliz**

Bonus Pack - Manipuladores to adapt this activity for loops.

Circulate: Make sure to walk around and have students run through their code with you watching. Are there any bugs? Use the debugging questions to help them find a solution.

- What does it do?
- What is it supposed to do?
- What does that tell you?
- Does it work at the first step?
- Does it work at the second step?
- Where does it stop working

Actividad de Cierre (8 min)

Actividades de Extensión

- Crea una grilla de tamaño natural en la alfombra con cinta adhesiva y pide a los estudiantes que traigan peluches a la escuela. Ahora los estudiantes pueden programar a sus amigos para que muevan sus peluches como se indique en los programas.
- Pide a los estudiantes que creen sus propios mapas para que otros/as estudiantes lo solucionen usando loops.
- Dibuja un programa en la pizarra que use varios grupos de comandos repetidos y pide a los/as estudiantes que salgan al frente de la clase por turnos para cambiar los símbolos por loops repetir.

Standards Alignment

Estándares para ciencias de la computación CSTA K-12 (2017)

- **AP** - Algoritmos y programación



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Lección 8: Loops with Scrat

Desarrollo de habilidades | Bucles

Descripción

Building on the concept of repeating instructions from "Happy Loops," this stage will have students using loops to get to the acorn more efficiently on Code.org.

Propósito

In this lesson, students will be learning more about loops and how to implement them in Blockly code. Using *loops* is an important skill in programming because manually repeating commands is tedious and inefficient. With these Code.org puzzles, students will learn to add instructions to existing loops, gather repeated code into loops, and recognize patterns that need to be repeated.

Agenda

Actividad Previa - Cimiento Sin Conexión (10 min)

Review Unplugged Activity

Actividad Puente - Escoge Una

Unplugged Activity Using Paper Blocks
Previewing Online Puzzles as a Class

Online Foundation: Preview Loops In Ice Age

Actividad Principal (30 min)

Actividad de Cierre (5 - 10 minutos)

Journaling

Aprendizaje Extendido

Ver en Code Studio

Objetivos

Los estudiantes podrán:

- Crear un programa mediante estructuras que repitan áreas de código
- Mejorar el código existente al encontrar áreas de repetición y moverlas a estructuras en bucle

Preparación

- ☐ Review the previous unplugged lesson and develop questions to remind students why loops are used.
- ☐ (Optional) Pick a couple of puzzles to do as a group with your class.
- ☐ Gather supplies from previous Happy Loops to reuse for warm up
- ☐ Make sure each student has a journal.

Enlaces

¡Importante! Haz una copia de los documentos que piensas compartir con los estudiantes.

Para los estudiantes

- **Caras de Emociones** - Imágenes de emociones [Hacer una copia ▼](#)
- **Tarjetas de Mapas Felices** - Ficha [Hacer una copia ▼](#)
- **Pieza Juego Mapa Feliz Bonus Pack** - Manipuladores [Hacer una copia ▼](#)
- **Piezas del Juego Mapa Feliz** - Manipuladores [Hacer una copia ▼](#)
- **Bloques Blockly Sin Conexión (Cursos K-1)** - Manipuladores

Vocabulario

- **Bucle** - la acción de hacer algo una y otra vez.
- **Repetir** - hacer algo de nuevo.

Guía docente

Actividad Previa - Cimiento Sin Conexión (10 min)

Review Unplugged Activity

🔗 This lesson relies on the concept of `repeat` loops that students learned in the previous unplugged activity, Happy Loops. It is important to bring this idea from the real world into digital form so that students understand how to use Blockly blocks to repeat a task multiple times.

Display: Show students map from the "Happy Loops" exercise that they completed in the lessons prior to this one.

Discuss: Ask students to recall the symbols used in "Happy Loops."

- What happens when "East" arrow is circled with the number 3? (It moves E 3 times)
- What is it called when we circle an arrow and add a number? (A `repeat` loop)

Transition: Once you are satisfied that your students remember "Happy Loops", you can move into the Bridging Activity.

Actividad Puente - Escoge Una

Choose *one* of the following to do with your class:

Unplugged Activity Using Paper Blocks

Select an empty Flurb map from the **Happy Map Cards - Worksheet** and give students **Unplugged Blockly Blocks (Grades K-1) - Manipulatives** prefilled with the `collect` command, a `repeat` loop, and the cardinal commands like `E →` (East) and `W ←` (West). Now, have the students program the Flurb from their desks using the paper Blockly blocks to get the Flurbs to collect the fruit. Make sure that they understand that the blocks need to go from top to bottom and they all need to touch!

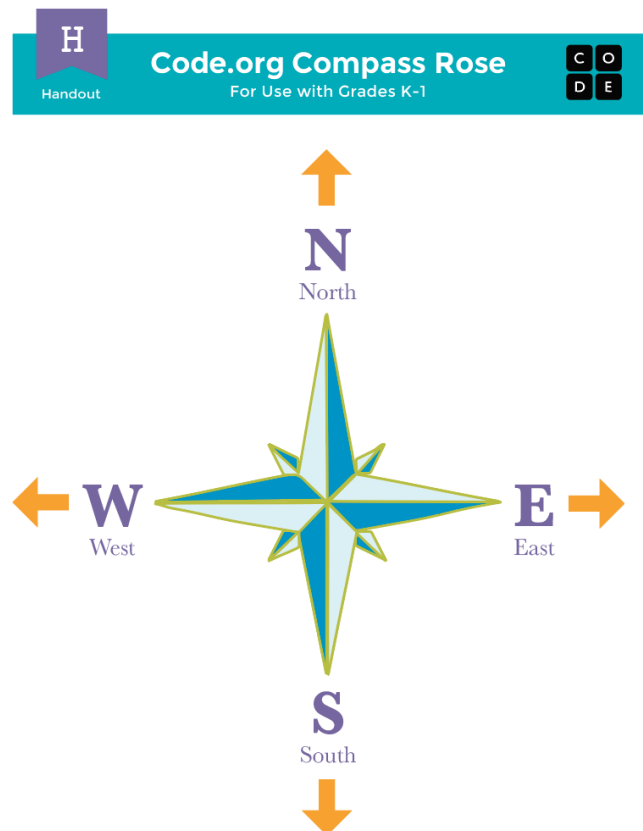
Previewing Online Puzzles as a Class

Pull a puzzle from the corresponding online puzzles.

We recommend puzzle 4. Using arrows from the **Happy Map Game Pieces - Manipulatives** and **Happy Map Game Pieces Bonus Pack - Manipulatives**, have students lay out a pattern that they think will get the Harvester to pick all the corn. Ask the students to share. See how many other students had the same answer!

🔗 Teaching Tip

If your class has already learned cardinal directions, then changing "Up" and "Down" to "North" and "South" shouldn't be a problem. If they have not, we have provided a handy worksheet with the Code.org Compass Rose that you can use to get students onboard. This conversion will come in handy for nearly all of the online puzzles aimed at kindergarten and first grade.



Let students know that they will see those letters in their online programs next to the direction arrows.

🔗 Teacher Tip:

If you predict that your students will have trouble with the idea of using `repeat` loops to not only move, but also pick corn, you can introduce this idea in the Bridging Activity. This will help students understand that loops can have many different uses.

Online Foundation: Preview Loops in Ice Age

To finish the connection, preview an online puzzle (or two) as a class.

Model: Reveal an entire online puzzle from the progression to come. We recommend Lesson 8, Puzzle 5. Point out the "Play Area" with Scrat and the acorn, as well as the "Work Space" with the Blockly code. Explain that this Blockly code is now the language that the class will be using to help Scrat get to the acorn. Do students see any similarities to the exercise that they just did? What are the big differences?

Work with your class to drag code into the workspace in such a way that Scrat (eventually) gets to the acorn.

Transition: Students should now be ready to transition to computers to complete online puzzles on their own.

Actividad Principal (30 min)

Actividad de Cierre (5 - 10 minutos)

Journaling

Having students write about what they learned, why it's useful, and how they feel about it can help solidify any knowledge they obtained today and build a review sheet for them to look to in the future.

Journal Prompts:

- What was today's lesson about?
- Draw one of the **Feeling Faces - Emotion Images** that shows how you felt about today's lesson in the corner of your journal page.
- Draw Scrat and an acorn.
- Draw yourself using a loop to do an everyday activity, like brushing your teeth.

Aprendizaje Extendido

Moviendo así

- Entrega a los alumnos fotos de acciones o movimientos de baile que pueden hacer.
 - Pide a los alumnos que preparen movimientos y agreguen bucles para hacer una coreografía con su propio baile.
- Comparte los bailes con el resto de la clase.

Volver a conectar

- Busca algunos videos de YouTube de bailes populares que se repiten.
- ¿Puede tu clase encontrar los bucles?
- ¡Intenta lo mismo con canciones!

Standards Alignment

Estándares para ciencias de la computación CSTA K-12 (2017)

- **AP** - Algoritmos y programación



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Lección 9: Loops with Laurel

Desarrollo de habilidades | Bucles

Descripción

In this lesson, students continue learning the concept of loops. In the previous lesson, students were introduced to loops by moving through a maze and picking corn. Here, loops are used to collect treasure in open cave spaces.

Propósito

This lesson gives students more practice with loops and introduces a new block, `get treasure`. The block works just like `pick corn` did in Harvester. These puzzles are more open, giving students more flexibility for their final solutions.

Agenda

Actividad previa (10 min)

Introduction

Actividad Principal (30 min)

Online Puzzles

Actividad de Cierre (5 - 10 minutos)

Ver en Code Studio

Objetivos

Los estudiantes podrán:

- Identificar los beneficios de usar una estructura de bucles en lugar de la repetición manual.
- Dividir una secuencia larga de instrucciones en la secuencia repetible más pequeña posible.

Preparación

- Play through the puzzles to find any potential problem areas for your class. - (Optional) Pick a couple of puzzles to do as a group with your class. - Review [r csf-lesson-recommend] - Make sure each student has a [r think-spot-journal].

Enlaces

¡Importante! Haz una copia de los documentos que piensas compartir con los estudiantes.

Para los estudiantes

- **Bloques Blockly Sin Conexión (Cursos K-1)**
 - Manipuladores

Vocabulario

- **Bucle** - la acción de hacer algo una y otra vez.
- **Repetir** - hacer algo de nuevo.

Guía docente

Actividad previa (10 min)

Introduction

Quickly review the definition of a loop, the action of doing something over and over again.

- What are loops?
- Why do we use them?

Actividad Principal (30 min)

Online Puzzles

Teacher Demonstration

We've included some multiple choice prediction levels that are difficult for non-readers. These levels are optional for you to review with your class to help prepare for the puzzles to come. Alternatively, these could be used after finishing the stage as a review for the class.

Prediction Levels:

- **Course A, Loops in Collector #1**
- **Course A, Loops in Collector #2**

💡 Lesson Tip:

Some students may be curious about what happens when you add more blocks inside a repeat loop. Make sure to explain that the repeat loop goes through every block inside it once, then starts back over from the top and repeats that. It does not just repeat each block inside that many times and move to the next one.

Code Studio levels

The Collector

 1

(click tabs to see student view)

Practice

 2 3

(click tabs to see student view)

Using the Repeat Block

 4

(click tabs to see student view)

Practice

 5 6 7 8 9 10

(click tabs to see student view)

Challenge

 11

(click tabs to see student view)

Practice

 12 13 14

(click tabs to see student view)

Levels

 Extra Extra

(click tabs to see student view)

As students work through the puzzles, see if they can figure out how many blocks they use with a loop vs. without a loop.

Actividad de Cierre (5 - 10 minutos)

Standards Alignment

Estándares para ciencias de la computación CSTA K-12 (2017)

- **AP** - Algoritmos y programación



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Lección 10: Ocean Scene with Loops

Desarrollo de habilidades | Bucles

Descripción

Volviendo a los loops, los/as estudiantes aprenden a dibujar imágenes, mediante la aplicación de loops en secuencias simples de instrucciones. En la lección anterior, los loops se usaban para atravesar un laberinto y recolectar tesoros. Aquí, los loops están creando patrones. Al final de esta etapa, los/as estudiantes tendrán la oportunidad de crear sus propias imágenes, utilizando loops.

Propósito

Esta lección entrega una perspectiva diferente sobre cómo los loops pueden crear cosas en la programación. Los/as estudiantes también pueden reflexionar aquí sobre la ineficiencia de la programación sin loops, debido a la cantidad de bloques que el programa requeriría, sin la ayuda de loops "repetir".

Agenda

Actividad previa (10 min)

Introducción

Actividad Principal (30 min)

Online Puzzles

Actividad de Cierre (5 - 10 minutos)

Ver en Code Studio

Objetivos

Los estudiantes podrán:

- Contar el número de veces que una acción debería repetirse y representarla como un bucle.
- Descomponer una forma en su secuencia repetible más grande.
- Crear un programa que repita secuencias simples para dibujar formas complejas.

Preparación

- Play through the puzzles to find any potential problem areas for your class. - Review [r csf-lesson-recommend]. - Make sure each student has a [r think-spot-journal].

Enlaces

¡Importante! Haz una copia de los documentos que piensas compartir con los estudiantes.

Para los docentes

- **Detente y Piensa Online** - Video

Vocabulario

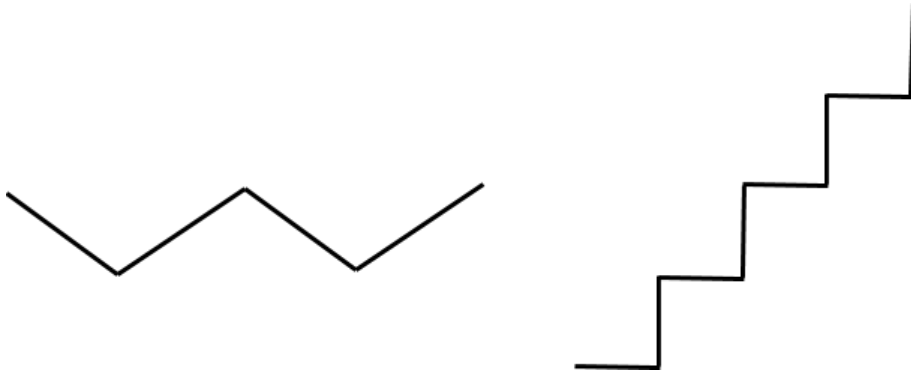
- **Bucle** - la acción de hacer algo una y otra vez.
- **Repetir** - hacer algo de nuevo.

Guía docente

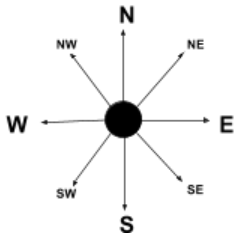
Actividad previa (10 min)

Introducción

- Revise rápidamente la definición de un loop. la acción de hacer algo una y otra vez.
- Discuta los diferentes patrones como zig-zags y escalones.
 - ¿Cómo explicarías a alguien cómo dibujar ese patrón?
 - ¿Cómo podría dibujar esto usando un loop?



En los niveles artista, los alumnos usarán ángulos de 45 grados descritos como noroeste, noreste, sudeste. Recomendamos una discusión breve sobre estas instrucciones con la clase y dibujar una imagen para que los estudiantes la consulten.



Actividad Principal (30 min)

Online Puzzles

Teacher Demonstration

We've included some multiple choice prediction levels that are difficult for non-readers. These levels are optional for you to review with your class to help prepare for the puzzles to come. Alternatively, these could be used after finishing the stage as a review for the class.

Prediction Levels:

- **Course A, Loops in Artist**

 Code Studio levels

💡 Teacher Tip

Remind the students to only share their work with their close friends or family. For more information watch or show the class **Detente y Piensa Online - Video**.

The Artist in Code Studio

1

(click tabs to see student view)

Practice

2

3

4

5

6

(click tabs to see student view)

Repeat Blocks with the Artist



(click tabs to see student view)

Practice

8

9

10

(click tabs to see student view)

Challenge

11

(click tabs to see student view)

Practice

12

13

(click tabs to see student view)

Free Play

14

(click tabs to see student view)

Levels

Extra

Extra

(click tabs to see student view)

Actividad de Cierre (5 - 10 minutos)

Standards Alignment

Estándares para ciencias de la computación CSTA K-12 (2017)

► AP - Algoritmos y programación



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Lección 11: The Big Event Jr.

Sin conexión | Eventos

Descripción

Los eventos son una buena forma de agregar variedad a un algoritmo pre-escrito. A veces usted quiere que su programa pueda responder al usuario exactamente cuando el/la usuario/a lo quiera. Para eso son los eventos.

Propósito

Hoy, los/as estudiantes aprenderán a distinguir los eventos de las acciones. Los/as estudiantes verán actividades interrumpidas por un "botón" presionado en un control remoto de papel. Cuando vean este *evento*, la clase reaccionar{a con una acción única. Los eventos son usados ampliamente en la programación y deberían ser reconocibles fácilmente después de esta lección.

Agenda

Actividad previa (15 mín)

Vocabulario

Una Serie de Eventos

Actividad Principal (15 mín)

The Big Event

Actividad de Cierre (10 mín)

Reflection

Evaluación (10 mín)

Aprendizaje Extendido

Ver en Code Studio

Objetivos

Los estudiantes podrán:

- Repetir los comandos dados por un instructor.
- Reconocer las acciones del docente como señales para iniciar comandos.
- Practicar la diferenciación entre acciones predefinidas y acciones basadas en eventos.

Preparación

- ☐ Prepare to project **The Big Event (Courses A, B) - Controller Image.**
- ☐ Print one **The Big Event - Assessment** per student.
- ☐ Make sure each student has a **Think Spot Journal - Reflection Journal.**

Enlaces

¡Importante! Haz una copia de los documentos que piensas compartir con los estudiantes.

Para los docentes

- **El Gran Evento** - Guía de respuestas de la evaluación [Hacer una copia ▼](#)

Para los estudiantes

- **El Gran Evento** - Video sin conexión ([descargar](#))
- **El Gran Evento (Cursos A, B) - Ficha** [Hacer una copia ▼](#)
- **El Gran Evento - Evaluación** [Hacer una copia ▼](#)

Vocabulario

- **Evento** - una acción que hace que algo suceda.

Guía docente

Actividad previa (15 mín)

Vocabulario

Esta lección tiene una palabra nueva e importante:

- **Evento** - Dígalo conmigo: E-ven-to

Una acción que causa que algo suceda.

Una Serie de Eventos

- Prepare a su clase para que contesten una pregunta:
 - "Voy a hacerles una pregunta. Quiero que levanten su mano si quieren que los señale para que den la respuesta".
 - Haga una pregunta simple que la mayoría de sus alumnos puedan contestar, como:
 - ¿Cuántos pulgares tengo?
 - ¿Qué es más grande, un pájaro o un caballo?
 - Señale a un alumno que tenga su mano levantada y permítale que le dé su respuesta.
 - Al terminar esta muestra, pregunte a la clase cómo supo que los alumnos querían que los señalaran.
 - Muy probablemente la clase mencione que fue porque levantaron las manos.
 - Explíqueles que cuando los alumnos levantan su mano, es un "evento" que causa que usted sepa que quieren ser señalados.
- Pregunte a la clase si pueden pensar en otros eventos que usan señales.
 - Puede que necesite recordarles que no habla de un evento como una fiesta de cumpleaños o un paseo de curso.
 - Si tienen dificultades, puede recordarles que un evento es una acción que causa que algo suceda.
 - ¿Qué hay de una alarma de reloj que se apaga? ¿Qué hace que eso suceda?
 - ¿Qué tal si se presiona "comenzar" en un microondas? ¿Qué produce eso?
 - ¿Qué tal si se presionar el botón "encender" en el control de la tele?
- Hoy, vamos a crear programas con eventos.

Actividad Principal (15 mín)

The Big Event

- Do you remember helping the Flurbs find fruit?
 - In that exercise, you knew in advance exactly where you wanted your Flurb to end up, so you could make a program that took them from start to finish without any interruptions.
 - In most real programs, we can't do that because we want to have options, depending on what the user needs.
 - Say that I only want my character to move when my finger is on the screen of my phone. I would need to program the character to only move when I put my finger on the screen of my phone.
 - Putting my finger on the screen would then become an "event" that tells my character to move.

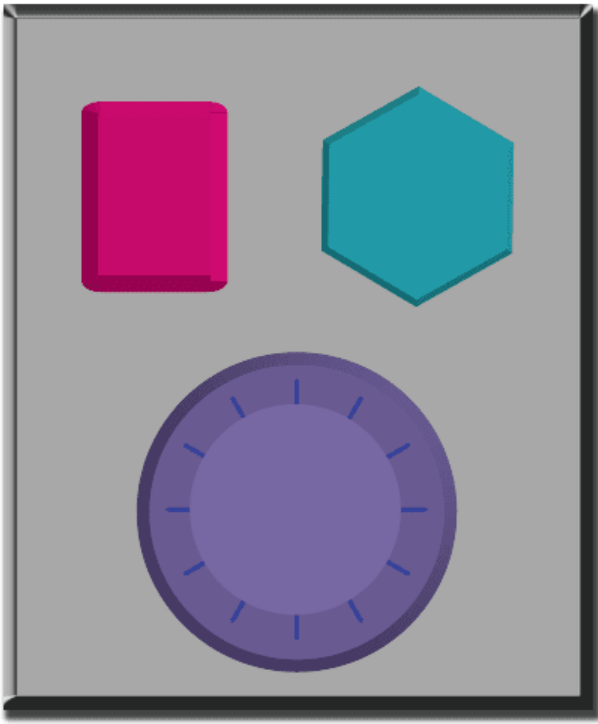
💡 Lesson Tip

If your students seem confused, talk about their favorite games and all of the ways that they let the characters know what they're supposed to do. Point out how the game would be really boring if it ran from start to finish without any events required.

In earlier lessons, we created algorithms that allowed us to control a friend or Flurb for several steps at a time. It was fun and useful, but what happens when you don't know everything that you want your friend to do in advance? This is where events come in!

Directions:

- Project **The Big Event (Courses A, B) - Controller Image** onto your classroom screen.



- Decide with your class what each button does. We suggest:
 - Pink Button -> Say "Wooooo!"
 - Teal Button -> "Yeah!"
 - Purple Dial -> "Boom!"
- Practice tapping the buttons on the overhead and having your class react.
- Add some button sequences into the mix and have the students try to keep up with their sounds.
- Let your class know that every time you push a button, it is an "event" that lets them know what they are expected to do next.
- Get the class started on a planned task before interrupting them again with the buttons. We suggest:
 - Counting to 10
 - Singing "Old MacDonald"
- Once their plan is underway, interject button presses sporadically.
- Continue the blend until they understand the difference between actions that are guided by a plan and those that are event driven.

Actividad de Cierre (10 min)

Reflection

Discuss: Ask students to reflect on what they have learned through the following prompts:

- Why do we need to be able to handle events in a program?
- What are some other kinds of events that you can think of?

Journal: In their **Think Spot Journals**, ask students to write and draw with the following questions in mind:

- What was today's lesson about?
- Draw one of the **Feeling Faces - Emotion Images** that shows how you felt about today's lesson in the corner of your journal page.
- Draw an event that caused an action today.
- Draw an action that was caused by an event that happened today.

Evaluación (10 min)

Distribute: Hand out one **The Big Event - Assessment** to each student and allow them to complete it independently after the instructions have been well explained. This should feel familiar, thanks to the previous activities.

Aprendizaje Extendido

Use estas actividades para mejorar el aprendizaje de los alumnos. Pueden usarse como actividades fuera del aula u otros enriquecimientos.

El Evento de una Persona es la Reacción de Otra

Asigne a cada estudiante un evento del cual encargarse y una reacción apropiada para ese evento. Encadene las acciones para que así la reacción de un/a niño/a se convierta en un evento que gatilla la reacción de otro/a estudiante. Siga asignando hasta que todos tengan algo que hacer y que todos hagan reaccionar a alguien.

Eventopalooza

Divida la clase en grupos. Usando el Controlador de Eventos, asigne a cada grupo una reacción diferente para el mismo botón. Haga esto para cada uno de los tres botones, ¡y entonces observe el caos!

Standards Alignment

Estándares para ciencias de la computación CSTA K-12 (2017)

- **AP** - Algoritmos y programación



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Lección 12: On the Move with Events

Descripción

En esta actividad online, los/as estudiantes tendrán la oportunidad de aprender cómo usar los eventos en el Play Lab y cómo aplicar todas las habilidades de codificación que han aprendido para crear un juego animado. ¡Es tiempo de ponerse creativo/a y hacer una historia en el Play Lab!

Propósito

Hoy, los/as estudiantes desarrollarán aún más su comprensión de los eventos usando Play Lab. Los eventos son muy comunes en los programas de computación. En esta actividad, los/as estudiantes usarán los eventos para hacer que un personaje se mueva por la pantalla, haga ruidos, y cambie los fondos basado en eventos iniciados por el usuario.

Agenda

Actividad previa (10 min)

Introducción

Actividad Puente - Eventos (10 min)

Unplugged Activity Using Paper Blocks
Previewing Online Puzzles as a Class

Actividad Principal (30 min)

Online Puzzles and Free Play

Actividad de Cierre (5 - 10 minutos)

Journaling

Aprendizaje Extendido

Ver en Code Studio

Objetivos

Los estudiantes podrán:

- Identificar acciones que se correlacionan con eventos de entrada.
- Crear una historia animada e interactiva mediante secuencia y controladores de eventos.
- Compartir un artefacto creativo con otros estudiantes.

Preparación

- ☐ Play through the puzzles to find any potential problem areas for your class.
- ☐ (Optional) Pick a couple of puzzles to do as a group with your class.
- ☐ Review **CS Fundamentals Main Activity Tips - Lesson Recommendations**.
- ☐ Make sure every student has a **Think Spot Journal - Reflection Journal**.

Enlaces

¡Importante! Haz una copia de los documentos que piensas compartir con los estudiantes.

Para los docentes

- **Detente y Piensa Online** - Video
- **Sugerencias para la Actividad Principal de Fundamentos de Ciencias de la Computación** - Recomendaciones de lecciones [Hacer una copia](#)

Para los estudiantes

- **El Gran Evento (Cursos A, B)** - Ficha [Hacer una copia](#)
- **Bloques Blockly Sin Conexión (Cursos K-1)** - Manipuladores

Vocabulario

- **Evento** - una acción que hace que algo suceda.

Guía docente

Actividad previa (10 min)

Introducción

Revisión de la actividad "El Gran Proyecto" con los alumnos:

- ¿"Programamos" los eventos de botón para hacer qué cosa?

Ahora vamos a agregar eventos a nuestro código. Específicamente, vamos a tener un evento para cuando dos personajes se toquen.

- ¿Cuándo has visto a dos personajes tocarse como un evento en los juegos?

Actividad Puente - Eventos (10 min)

This activity will help bring the unplugged concepts from "The Big Event" into the online world that the students are moving into. Choose *one* of the following to do with your class:

Unplugged Activity Using Paper Blocks

Using the remote from the **The Big Event (Courses A, B) - Controller Image** and blocks from **Unplugged Blockly Blocks (Grades K-1) - Manipulatives**, gather your class to reprise the activity from the previous lesson. Ask the class "when the teal button is pushed, what do we do?" then fill in one of the `when event` blocks and one of the blue action blocks accordingly. Make sure that the students understand that the `when` blocks need to be on top of the blue block and they need to touch in order for the program to run.

💡 Lesson Tip

Students will have the opportunity to share their final product with a link. This is a great opportunity to show your school community the great things your students are doing. Collect all of the links and keep them on your class website for all to see!

Remind the students to only share their work with their close friends or family. For more information watch or show the class **Pause and Think Online - Video**.

Previewing Online Puzzles as a Class

Pull a puzzle from the corresponding puzzles online. We recommend puzzle 7. Call on different students to make a funny noise when you click on Jorge. Explain this is an event that they are reacting to and Jorge can be coded to make noise when you click on him.

Actividad Principal (30 min)

Online Puzzles and Free Play

This is the most free-form plugged activity of the course. At the final stage students have the freedom to create a story of their own. You may want to provide structured guidelines around what kind of story to write, particularly for students who are overwhelmed by too many options.

🖥️ Code Studio levels

Create a Story



(click tabs to see student view)

Free Play



(click tabs to see student view)

Mini-project: Jorge the Dog

(click tabs to see student view)

Levels

(click tabs to see student view)

Actividad de Cierre (5 - 10 minutos)

Journaling

Having students write about what they learned, why it's useful, and how they feel about it can help solidify any knowledge they obtained today and build a review sheet for them to look to in the future.

Journal Prompts:

- What was today's lesson about?
- Draw one of the **Feeling Faces - Emotion Images** that shows how you felt about today's lesson in the corner of your journal page.
- Draw an event you used in your program today.
- Imagine that you have a remote controlled robot. What would the remote look like? Draw a picture of what you think you could make the robot do.

Aprendizaje Extendido

Use estas actividades para mejorar el aprendizaje del alumno. Se pueden usar como actividades al aire libre u otro tipo de enriquecimiento.

Mirar Bajo la Capucha

Cuando compartes un enlace a su historia, también compartes todo el código que va de fondo. Esta es una buena forma para que los alumnos aprendan de los otros.

Postéa enlaces para historias terminadas en línea. - ¡También invente una historia para compartir!

- Cuando los alumnos suban un enlace, pídeles que hagan clic en el botón "Cómo Funciona" para ver el código para ver el código que está detrás de la historia.
- Discutan como grupo las formas diferentes en que sus compañeros codificaron sus historias.
 - ¿Qué te sorprendió?
 - ¿Que te gustaría intentar?
- Escoge la historia de alguien más y haz clic en **Remix** para construir desde ahí. (No te preocupes, la historia original estará segura)

Standards Alignment

Estándares para ciencias de la computación CSTA K-12 (2017)

► **AP** - Algoritmos y programación



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