Lesson 5

CODING AND COMPUTATIONAL THINKING

KINDERGARTEN

CS FOR ALL

NSF
Award #1837380

SUMMARY AND STANDARDS

Summary:

In this lesson, students will write a story with a beginning, middle, and end, develop an algorithm to create the story, and publish a story in ScratchJr.

ELA Standards:

Communication and Multimodal Literacies:

1.1 The student will develop oral communication skills.

  j) Ask and respond to questions to seek help, get information, or clarify information.

  l) Increase listening and speaking vocabularies.

Reading:

K.7 The student will expand vocabulary and use of word meanings.
  a)   Discuss meanings of words.
  b)   Increase vocabulary by listening to a variety of texts read aloud.
  c)   Use vocabulary from other content areas.

K.8 The student will demonstrate comprehension of fictional texts.
  b)   Relate previous experiences to what is read
  c)   Use pictures to make predictions.
  d)   Ask and answer questions about what is read.
  e)   Use story elements of characters, settings, and events to retell stories sequentially using beginning, middle, and end.

Writing:

K.11 The student will write in a variety of forms to include narrative and descriptive.
  c) Use letters to phonetically spell words that describe pictures or
      experiences.

CS Standards:

K.1 The student will construct sets of step-by-step instructions (algorithms) either independently or collaboratively including sequencing that emphasize the beginning, middle, and end.

K.2 The student will construct programs to accomplish tasks as a means of creative expression using a block based programming language or unplugged activities, either independently or collaboratively, including sequencing, emphasizing the beginning, middle, and end.

MATERIALS AND RESOURCES NEEDED FOR THIS LESSON:

In preparation for this lesson, you may need a copy of *The Three Little Pigs* and *Hello Ruby*.

You may also wish to review:
- VIRTUAL L5GK Slide Deck - Use these to display all related materials to students during lesson
- Coding Story Map
- Scratch, Jr Checklist
- ScratchJr Blocks
- ScratchJr Interface Guide
- ScratchJr Triggering Blocks Resource Page
- ScratchJr "Drive Across the City" activity
- ScratchJr "Dribble a Basketball" activity
- Coding and Storytelling in ScratchJr Video

Hello Ruby Resources:

In preparation for this lesson, you may wish to read aloud *Hello Ruby* chapter 7 in advance.

Note: The following lesson is a culminating project in which students write and code their own adaptation story. You may wish to extend this lesson over several days in order to allow students time for writing, coding, and publishing their story with others.

LESSON OBJECTIVES: I CAN...

❏ Ask and answer questions about a story

❏ Write a story with a beginning, middle, and end

❏ Sequence a story with a beginning, middle, and end

❏ Debug an algorithm

❏ Develop an algorithm to represent the beginning, middle, and end of a

story scene in ScratchJr

Vocab:

● Algorithms

COMPUTER SCIENCE

Introduce Computer Science Word Wall and Algorithms: show "computer science", "algorithms", and "motion blocks" word wall cards.

Teacher: "Welcome back to computer science (show "computer science" word wall card) in Kindergarteners!

Introduce Computer Science Word Wall and Algorithms: show "computer science", "algorithms", and "motion blocks" word wall cards.

Last time, we learned how to create algorithms like computer scientists. We were able to create one to show what happened at the beginning of The Three Little Pigs. We even got to use blocks in ScratchJr to tell the computer our commands to make our characters move, like up, down, left, and right! (show motion blocks).
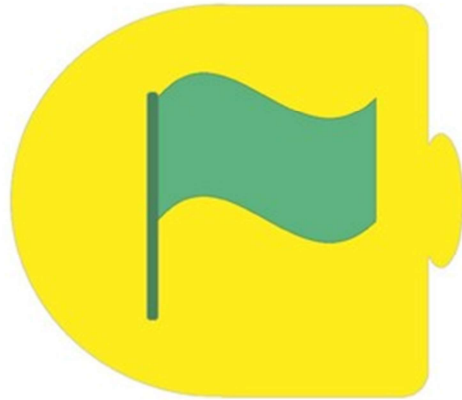
This means _____.

## Review motion blocks: start, move right, move left, and end (Slides 7-18)

"Let's warm up our computer science brains by reviewing what some of these awesome blocks do in our algorithm."

Show blocks one at a time. Allow students to turn and talk to a partner to name the block and discuss what it does in ScratchJr.
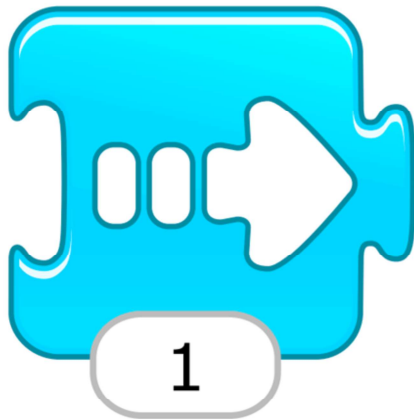
Rationale:
Students will need multiple opportunities to see, identify, and describe the purpose of the coding blocks.
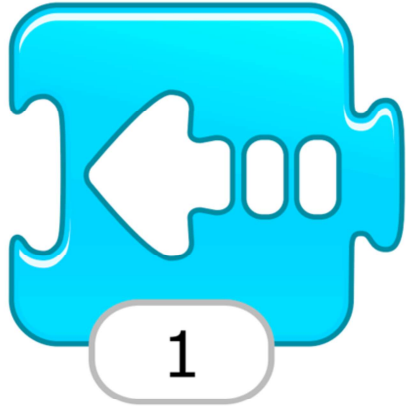
TURN AND TALK
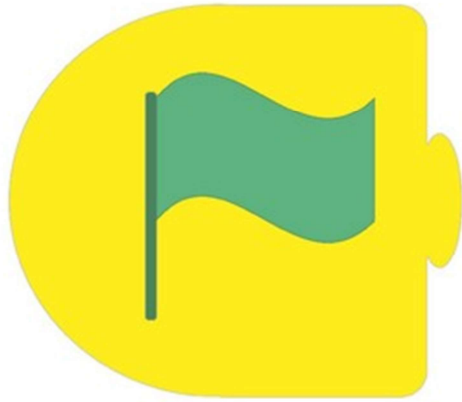
This means __start__.

This means _____ _____.

TURN AND TALK

This means __move__ __right__.

This means _____ _____.

TURN AND TALK

This means __move__ __left__.

This means _____.

TURN AND TALK

This means ___end___.

HOW TO RETELL A STORY

Choose a video to watch: Think about the beginning, middle, and end of stories, and how to bring each part to life in ScratchJr.

"Today, we are going to watch a video. While we are watching, I want you to think about the beginning, middle, and end of stories, and how you might bring each part to life in ScratchJr!"

Choose video:

eSpark Learning - Beginning, Middle, and End
https://www.youtube.com/watch?v=S96cYTI-gAk

How to Retell a Story For Kids
https://www.youtube.com/watch?v=w33-m8-geuM

GUIDED INSTRUCTION

algorithms

Discuss Algorithms: **Algorithm** is a set of directions that we give to our computer to tell it what to do.

"Today, we are going to create our own **algorithms.** (Point to word wall) Remember, an **algorithm** is a set of directions that we give to our computer to tell it what to do. We use the **coding blocks** to give our directions. But… before we create our **algorithm**, we need to think about the story we want to bring to life!
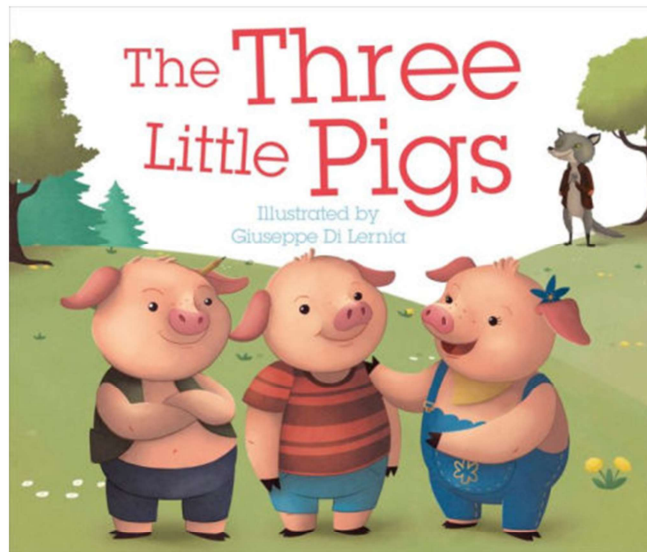
Introduce The Three Little Pigs story and how to use Beginning, Middle, and End.

You've been working hard at retelling the beginning, middle, and end of stories.
We've also been learning a lot about The Three Little Pigs.
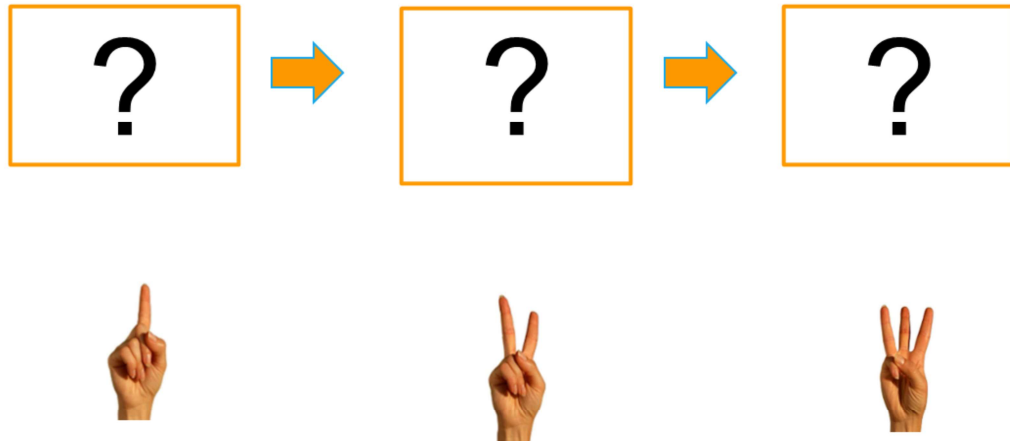
Turn & Talk with partner: Retell the story of The Three Little Pigs across fingers.

With your partner, retell the story of The Three Little Pigs across your fingers. As you retell, hold up one finger to tell the beginning, one finger to tell the middle, and one finger to tell the end. Remember to **abstract** the story and only tell the most important parts!" Turn and talk.
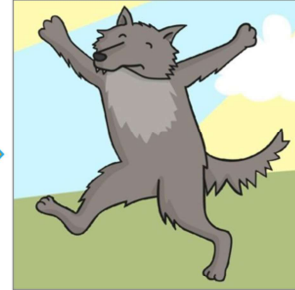
Review the BME of the story

When finished, review the BME of the story with students.

Great Job!

Introduce Activity: Students will give directions to their own story.

Great job! Today, you're not just the computer scientists, but the author too. You are going to get to give directions *to the story*!

character *(sprite)*

Ask which characters/sprites students would use instead of pigs and big, bad wolf: Give time to think.

Since you're the author, you get to think… "If I wrote this story, which animal would I have used instead of the pigs?" Model think time. "If I wrote this story, which animal would I have used instead of the big, bad wolf?" Model think time.

"setting" *(where* and *when)*

Ask where the story should take place: Give time to think.

"Where are your characters?" Model think time.

Blue Blocks- Motion blocks

Actions - what the character will be doing

Ask what the character will be doing: Give time to think. Turn and talk with partner about story that they made up.

"What will your characters be doing?" (Model think time.) "Turn and talk to your partner and tell them what you would do if you were the author!" Turn and talk.

TURN AND TALK

"You just created a brand new story!"

Rationale:

Using a familiar story allows students to more easily and creatively adapt the story using their own ideas.

Note: Model think time and allow opportunities for turn and talk in order for students to see, hear, and experience the story writing process. It reinforces that ideas for writing take time and thought, and that students are not expected to have an idea right

away.

INDEPENDENT PRACTICE

Time: This is a culminating project that can be extended over several days. Students may complete this portion independently or with a partner.

Note: *Depending on their familiarity with ScratchJr, you may decide to have students work in small groups or pairs for this activity, coding and debugging the algorithm together.*

Beginning ☝	Middle ✌	End 🖐
Blue Blocks- Motion blocks	**Blue Blocks- Motion blocks**	**Blue Blocks- Motion blocks**

Use [Coding Story Map](#) to plan the BME of students' stories: Draw what will happen in each box and then circle the motion blocks that will be needed below.

"Now that you have your ideas, we're going to show the beginning, middle, and end on this story map. In each box, draw a picture of your animals at the beginning, middle, and end. Remember, the story is just like The Three Little Pigs… except now it's your animals! Then, think about what you would like to tell your computer to do to bring your story to life. Circle the motion blocks below that you will need to use."

Use [ScratchJr Checklist](#) to plan the rest of the story.

- **Note**: If needed, review the [checklist](#) and/or a few student examples of **algorithms** in Scratch Jr, discussing the parts that the students included. Alternatively, review ScratchJr blocks. *Show [blocks](#) one at a time. Allow students to turn and talk to a partner to name the block and discuss what it does in ScratchJr.*

"Excellent work! Now that we have decided on what we would like to happen in our story, it's time to plan the rest of the story. You might remember our [ScratchJr Checklist](#) from last time. Today, we're going to use it to plan our new stories.

Note: *After students complete their storyboard, allow students to share their story adaptation plans with*

other children. This will allow them to see the different ways that the story can be represented and reinforce the concept of BME in a story.

SCRATCHJr

Remind students to debug if their algorithm isn't working.

Note: If students finish early, they can continue coding the other parts of their story. Be sure to save students' work during this period for a publishing party later.

Rationale: By creating a story map, students have a concrete tool to refer back to when coding to bring their story to life.

"Great job, writers! Now, it's time to create our algorithms and tell our computers what we'd like them to do. When you get your computer today, you're going to use ScratchJr to code the beginning, middle, and end of your story. You get to bring your story to life!"

"Remember when we use our checklist for ScratchJr, we:
      1) Do our pre-writing
      2) Click on a new project
      3) Choose a setting
      4) Choose a character (sprite)
      5) Choose the green flag to start our algorithm

"Start your **algorithm** and use the move left or move right blocks. Remember, you can debug the algorithm if the pig doesn't go where you wanted him to go."

WRAP UP

Before we go, let's share our animation with someone and see if there are any bugs!

ScratchJr publishing party!

Share the beginning, middle, and end of your new story to your partner and show them how you brought a part of your story to life.

A ScratchJr publishing party! It is time to share your animation with others! In a moment, your teacher will let you know how you are going to share your animation. You may just be sharing with a partner or doing a gallery walk.
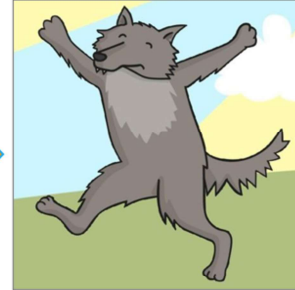
Share the beginning, middle, and end of your new story to your partner and show them how you brought a part of your story to life.

Wow! You have worked so hard! I can't wait to hear all of the new versions of The Three Little Pigs. During our publishing party today, you are going to be able to tell the beginning, middle, and end of your new story to your partner and show them how you brought a part of your story to life."

Note: *Like other writing publishing parties, this is a wonderful opportunity to invite parents to participate. Students can share their ScratchJr creation with them in some way. You may also choose to have students share with more than one peer, giving them practice in their retelling and presentation skills.*

Computer Science

Remind students that they are computer scientists and writers. They can use computer science skills like finding **patterns, debugging, decomposing, abstracting,** and **coding algorithms** to do important work, like reading and writing stories.

"Today and every day, you are computer scientists and writers. We can use our computer science skills, like finding **patterns, debugging, decomposing, abstracting,** and **coding algorithms** to do important work, like reading and writing stories. You are experts!"

Rationale: Creating pieces of writing (and algorithms) for authentic audiences reinforces the purpose of writing and may increase the overall enjoyment of the writing process. Likewise, it reinforces how computers can help us to complete tasks.