

Rethinking Circle Time

Sequencing with Programmed Multiple Logic Paths + ScratchJr: Frogs Hopping



Lesson Summary	In this literacy and CT lesson, students work on sequencing with programmed multiple logic paths using ScratchJr. This task has a literacy component using the book <i>The Three Little Pigs</i> by James Marshall, which will be used during the task to introduce students to the context of the ScratchJr activity. Using the context of one character (wolf) moving from one house to the next, students identify the order of the visit based on the story.
Grade Level	K-2
Subjects Addressed	Computational Thinking
Standards	<ul style="list-style-type: none">● CSTA<ul style="list-style-type: none">○ 1A-AP-08, 1A-AP-09, 1A-AP-10, 1A-AP-11, 1A-AP-12, 1A-AP-14
Learning Objectives	Students will be able to: <ul style="list-style-type: none">● Computational Thinking:<ul style="list-style-type: none">○ <i>Algorithms & Procedures:</i> Create a sequence of steps using coding blocks to solve a given problem○ <i>Debugging:</i> Revise their coding identifying and fixing mistakes
Teacher Background and Content Information	<p>Sequencing: Sequencing is a computational thinking concept as part of the idea of algorithms. Algorithms are step-by-step, ordered procedures to accomplish a task. Students must learn to create directions so a machine can follow them and produce the intended result. This activity is meant to explore the idea of sequencing and the students' ideas of reversing directions as a computational sequencing strategy.</p> <p>Debugging: When students code the directions, it might not work as expected because of mistakes they might have made when planning the directions. The process of identifying and fixing errors in the code is known as debugging. They will need to engage in debugging all the time throughout the activity by revisiting their plan and making changes.</p> <p>ScratchJr: With ScratchJr, young children (ages 5-7) can program their own interactive stories and games. In the process, they learn to solve problems, design projects, and express themselves creatively on the computer (ScratchJr website, 2023). It may be helpful for students to be familiar with ScratchJr. Particularly, they need to know how to use the motion blocks including the meaning of each icon and how to change values.</p>
Differentiate/Inclusion	For the lower level, students can make the frog walk through the park and head to the bench. They can move on to the next level if they become familiar with making sequences for the lower level. For the upper level, students can make the frog hop, requiring more

thought to complete the steps to get the frog to the bench. Concerning a teacher's educational purpose, this lesson can go beyond simple sequences using a loop function.

Materials

iPad, ScratchJr app, [a sample project file for student](#) (pre-made sprite and background), [a sample project file for teacher](#) (including the example codings)

Overall Description

Launch/ Engage

1. Bring the topic by connecting it with students' daily experience.

- Say: *Hi, How are you doing today? I'm excited to share something with you today.*
- Say: *Do you like taking a walk through a park? Where did you go? How was it? Was there something interesting? Have you ever taken a seat on a park bench?*
 - Students will share their previous experiences with an activity in a park.
- Say: *Today we will walk and hop through a park pretending like a frog!*

Explore

1. Explore the ScratchJr task based on students' level.

For Level 1 (Walk)

- Say: *We can be a frog in Scratch Jr. (Show ScratchJr). There is a frog in the park. It needs to have a break in the bench by landing on each circle. Can you make the frog walk on each circle, finish at the bench, then lay down?*
- Listen to the list of student responses
 - Students will be able to identify that there is an order of each step for the frog to move onto the bench with the concept of sequence.
 - Students will be able to identify how the frog can move onto each circle, finish at the bench, and lay down to have a break.
- Ask: *Did you see there is a "sequence" when the frog moves onto the next circle? How was the order when it moved onto each circle? How about when it arrives at the bench and lays down?*
- The order matters: there is a specific order of walking through the park.
 - Start on the far left circle
 - Land on each circle
 - Finish at the bench
 - Get the bench and lay down
 - 2nd level is asking the frog to jump on each circle

For Level 2 (Walk and hop)

- Ask: *Now, the frog wants to hop! Can you make the frog walkthrough hop on each circle, finish at the bench, then lay down?*
- Listen to the list of student responses
 - Students will be able to identify that there is an order of each step for the frog to move onto the bench with the concept of sequence.
 - Students will be able to identify how the frog can move onto each circle, hop at each circle, finish at the bench, and lay down to have a break.

	<p><u>Scaffolding</u></p> <ul style="list-style-type: none"> ● Explain that the blocks are directions representing the action for the sprite, telling them how to program the sprite at a time and how to play to test their code. ● Present the blocks and explain the function for triggering and motion blocks since these are the main blocks they will use in this activity. ● Ask: <i>What happens if I use this block? Let's think about it.</i> ● Ask: <i>What can you see in this block? What does the number mean under the arrow?</i> ● Observe the order of each block they select and how to make a backward sequence <ul style="list-style-type: none"> ○ You can ask questions to remind them of the order of each color of the rainbow. <ul style="list-style-type: none"> ■ <i>Why did you put that one next?</i> ■ <i>Why did you put that one back?</i> ● While administering this activity, it is important to keep an eye out for student understanding of sequence ordering
<p>Summarize/ Explain</p>	<p>1. Wrap up</p> <p>Say: <i>Today, we made a nice plan with ScratchJr and helped the frog get to the bench. We all did a great job!</i></p> <p>Ask questions to find out how students used the tools to make decisions when planning and executing the task.</p> <p>Ask: <i>What kinds of tools did we use today? How did it help to complete this activity?</i></p> <p>Share students' experiences on the activity, Ask: <i>Anyone who wants to share how it was? What were your favorite parts? Any challenges you had?</i></p> <p>If students could not complete the activity or had issue with coding, share the photos taken during the activity, and help them solve the problem together. Ask: <i>Anyone who wants to explain what happened in this picture? How can we solve this problem?</i></p>
<p>Apply/ Extend</p>	<ul style="list-style-type: none"> ● Create their own project: By creating their own sprite and background, have students make their own project. ● The different way: By letting students make their own goals and design the process, they can explore the project and make coding blocks as they create.

Teacher Notes

Example

Level 1 - walk - sequence



Level 1 - walk - loop



Level 2 - hop - sequence



Level 2 - hop - loop



Rethinking Circle Time

Sequencing with Programmed Multiple Paths + Literacy + ScratchJr: Three Little Pigs



Lesson Summary	In this literacy and CT lesson, students work on sequencing with programmed multiple logic paths using ScratchJr. This task has a literacy component using the book <i>The Three Little Pigs</i> by James Marshall which will be used during the task to introduce students to the context of the ScratchJr activity. Using the context of one character (wolf) moving from one house to the next, students identify the order of the visit based on the story.
Grade Level	K-2
Subjects Addressed	Literacy, Computational Thinking
Standards	<ul style="list-style-type: none">● CSTA<ul style="list-style-type: none">○ 1A-AP-08, SL.K.11A-AP-09, 1A-AP-10, 1A-AP-11, 1A-AP-12, 1A-AP-14● CCSS-ELA<ul style="list-style-type: none">○ Kindergarten: SL.K.1, SL.K.2, SL.K.3, SL.K.4, SL.K.7, RL.K.1, RL.K.7, RL.K.10○ First Grade: SL.1.1, SL.1.2, SL.1.3, SL.1.4, SL.1.7, RL.1.1, RL.1.7, RL.1.10○ Second Grade: SL.2.1, SL.2.2, SL.2.3, SL.2.4, SL.2.7, RL.2.1, RL.2.7
Learning Objectives	Students will be able to: <ul style="list-style-type: none">● Computational Thinking:<ul style="list-style-type: none">○ <i>Algorithms & Procedures:</i> Create a sequence of steps using coding blocks to solve a given problem○ <i>Debugging:</i> Revise their coding identifying and fixing mistakes● Literacy:<ul style="list-style-type: none">○ <i>Reading Comprehension:</i> Connect ideas in the story applying and extending these ideas to the coding problem. Students will answer questions about the guided reading and make predictions about the story.○ <i>Vocabulary:</i> Understand and acquire new words to their vocabulary.
Teacher Background and Content Information	<p>Sequencing: Sequencing is a computational thinking concept as part of the idea of algorithms. Algorithms are step-by-step, ordered procedures to accomplish a task. Students must learn to create directions so a machine can follow them and produce the intended result. This activity is meant to explore the idea of sequencing and the students' ideas of reversing directions as a computational sequencing strategy.</p> <p>Debugging: When students code the directions, it might not work as expected because of mistakes they might have made when planning the directions. The process of identifying and fixing errors in the code is known as debugging. They will need to engage in debugging all the time throughout the activity by revisiting their plan and making changes.</p>

	<p>ScratchJr: With ScratchJr, young children (ages 5-7) can program their own interactive stories and games. In the process, they learn to solve problems, design projects, and express themselves creatively on the computer (ScratchJr website, 2023). It may be helpful for students to be familiar with ScratchJr. Particularly, they need to know how to use the motion blocks including the meaning of each icon and how to change values.</p>
Differentiate/ Inclusion	<p>For the lower level, students can make the wolf go to each house of the three little pigs. They can move on to the next level if they become familiar with making sequences for the lower level. For the upper level, students can add more sprites like the three little pigs and make them sound or motion when the wolf comes to their house respectively. Concerning a teacher's educational purpose, this lesson can go beyond simple sequences using a loop function.</p>
Materials	<p>Book: The Three Little Pigs, iPad, ScratchJr app, a sample project file for student (pre-made sprite and background), a sample project file for teacher (including the example codings)</p>

Overall Description

Launch/ Engage	<ol style="list-style-type: none"> Bring the topic by reading the story, <i>The Three Little Pigs</i>. <ul style="list-style-type: none"> Say: <i>Hi, how are you doing? First, I want to read a story to you. Have you heard the story of "The Three Little Pigs" before? What do you remember about it? Have you ever encountered any other versions or adaptations of "The Three Little Pigs"? If yes, how were they different from the original story? If they have not read the book, ask What do you think this story might be about based on the title "The Three Little Pigs"?</i> Read <i>The Three Little Pigs</i>. <ul style="list-style-type: none"> Let's read it. Read <i>The Three Little Pigs</i>. (Here is an online version: The Three Little Pigs) Ask: <ul style="list-style-type: none"> <i>What materials did each pig use to build their houses, and in what sequence did they build them?</i> <i>What challenges did the pigs face when the wolf tried to blow down their houses? Can you describe the sequence of events for each pig?</i> <i>How did the third pig's house differ from the houses of the first two pigs? How did it withstand the wolf's attacks?</i> <i>How did the wolf attempt to enter the third pig's house? What happened to the wolf in the end?</i> Listen to the student's responses. <ul style="list-style-type: none"> <i>What does the little pig say when the big bad wolf asks to be let into the house? Can we say it together?</i> "No No No, Not by the hair of my chinny- chin-chin." <i>What does the wolf say in response to the little pig not letting him in? Can we say it together?</i> "I'll huff and I'll puff and I'll blow your house in."
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<p style="text-align: center;">Explore</p>	<p>1. Explore the ScratchJr task related to the story.</p> <ul style="list-style-type: none"> ● Open the Scratch project and demonstrate how to use it. ● Say: <i>This shows the three houses for the three little pigs and the big bad wolf from our story, and you need to help the wolf get to each of the houses in the story.</i> ● Explain that the blocks are directions representing the action for characters (in this case the wolf), telling them how to program the character at a time and how to play to test their code. ● Present the blocks and explain the function for motion, triggering, and control blocks since these are the main blocks they will use in this activity. ● Observe the order in which they program the wolf to get to each of the houses. <ul style="list-style-type: none"> ○ As they click on a block, ask them: <ul style="list-style-type: none"> ■ <i>Why did you put that one first or next?</i> ■ <i>Is this how it goes in the book?</i> ■ <i>Why did you restart?</i> ● While administering this activity, it is important to keep an eye out for student understanding of sequence ordering
<p style="text-align: center;">Summarize/ Explain</p>	<p>1. Wrap up</p> <p>Say: <i>Today, we made a nice plan with ScratchJr and made the wolf get to each house of the three little pigs. We all did a great job! Thank you for participating in today's activity, I hope you had fun! What do you think the moral or lesson of the story might be? Why?</i></p> <p>Ask questions to find out how students used the tools to make decisions when planning and executing the task.</p> <p>Ask: <i>What kinds of tools did we use today? How did it help to complete this activity?</i></p> <p>Share students' experiences on the activity, Ask: <i>Anyone who wants to share how it was? What were your favorite parts? Any challenges you had?</i></p> <p>If students could not complete the activity or had issue with coding, share the photos taken during the activity, and help them solve the problem together. Ask: <i>Anyone who wants to explain what happened in this picture? How can we solve this problem?</i></p>
<p style="text-align: center;">Apply/ Extend</p>	<ul style="list-style-type: none"> ● Create their own project: By creating their own sprite and background, have students make their own project. ● The different way: By letting students make their own goals and design the process, they can explore the project and make coding blocks as they create.

Teacher Notes

Example

