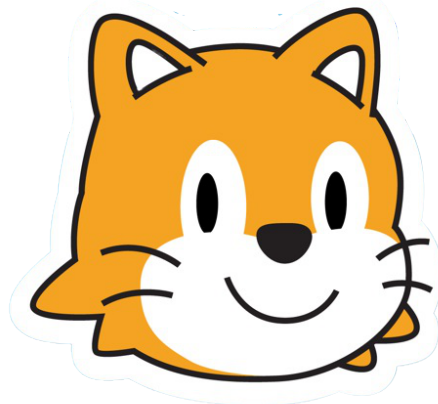




Animated Genres Classroom Curriculum for K-2



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Headed by Marina Bers*

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Introduction and Summary

This curriculum introduces powerful ideas from engineering and computer science that are not usually highlighted in early childhood education. The term “powerful idea” refers to a concept that children can learn through a curriculum that will serve them beyond the lifetime of a specific classroom technology. In this case, the curriculum revolves around the ScratchJr iPad application. Powerful ideas may be applied to many disciplines and will be rewarding in students’ academic and personal futures. Throughout the following curriculum, both activities and lessons will seek to illustrate these powerful ideas.

The curriculum will be divided into three modules based on three interactive genres of ScratchJr-based projects. These genres are collage, story, and game. Each of these modules is comprised of two units:

1. A series of lessons that introduce ScratchJr features and programming blocks
2. An opportunity for children to create their own projects by applying concepts learned in module lessons

This curriculum requires one iPad per student. Occasionally, additional materials are required, and they are noted where necessary.

About ScratchJr

ScratchJr is a developmentally appropriate programming language for children ages five through seven. Using the ScratchJr iPad application, children can create their own interactive collages, animated stories, and games. The application is the product of the DevTech Research Group, directed by Professor Marina Bers and the Scratch Foundation, with original funding from the National Science Foundation (NSF DRL-1118664), the ScratchJr iPad application was released in July 2014.

Pacing

This curriculum is designed to take place over the course of six weeks. Every week, two one hour lessons are to be taught. While this particular curriculum is described in detail over the following pages,

we acknowledge that teachers know their students best. Therefore, teachers should adjust activities and lessons to accommodate both the classroom culture and students' technological experience and developmental levels.

Module 1 – Interactive Collage

Lessons (1 hour each)

1. Instructions, Sequencing, and an Introduction to the ScratchJr iPad Application
2. Same Block Sequencing and Motion
3. Start on Green Flag Block, End Block, and Choosing Characters
4. Backgrounds and Review of Programming Multiple Characters

Module Project: Collage

Total Lesson and Project Time: 5 Hours

ScratchJr Blocks Learned

- Motion: Right, Left, Up, Down, Turn Clockwise, Turn Counterclockwise, Jump, Go Home
- Looks: Grow, Shrink, Show, Hide, Reset Size
- Start on Green Flag
- End

ScratchJr Skills Learned

- Drag block to scripting area
- Connect blocks
- Choose character
- Create new character
- Start program with green flag
- Stop program with red end block
- Choose backgrounds
- Create new backgrounds

Module 2 – Interactive Story

Lessons (1 hour each)

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5. Speed
6. Numbers and Repeating Sequences
7. Speech Bubbles, Sounds, Pages, Wait

Module Project: Story (two one-hour lessons)

Total Lesson and Project Time: 5 Hours

ScratchJr Blocks Learned

- Speed
- Repeat
- Repeat forever
- Voice recorder
- Say
- Go-to page
- Wait

ScratchJr Skills Learned

- Program characters to move at different speeds
- Use parameters on motion blocks to reduce the number of motion blocks used
- Use the repeat and repeat forever blocks to make a program repeat
- Record sounds and add them to projects
- Pause a character's program for a certain amount of time

Module 3 – Game

Lessons (1 hour each)

8. Start on Bump, Start on Tap, Send and Receive Messages, Stop

Module Project: Game

Total Lesson and Project Time: 2 Hours

ScratchJr Blocks Learned

- Start on bump
- Start on tap
- Send message
- Receive message
- Stop

ScratchJr Skills Learned

- Use the start on bump block to activate another character's program
- Use the start on tap block to activate a character's program
- Use the send and receive


- message blocks to initiate another character's program
- Terminate particular characters' programs with the stop block

Lesson 1: Instructions, Sequencing, and an Introduction to ScratchJr

Summary

In this lesson, children will be introduced to two concepts that will create a foundation for understanding programming: instructions and sequencing. Through various interactive activities, students will acquire a basic understanding of these two concepts. The lesson will conclude with an introduction to the ScratchJr interface.

Objectives <i>Students will learn...</i>	Objectives <i>Students will be able to...</i>
<ul style="list-style-type: none"> • Appropriate iPad use • The concept of programming • The concept of instructions • The concept of sequencing • The basic features of the ScratchJr interface 	<p>General</p> <ul style="list-style-type: none"> • Give specific instructions • Sequence instructions to achieve simple objectives <p>ScratchJr</p> <ul style="list-style-type: none"> • Move blocks into the scripting area • Use blocks in scripting area as buttons • Select a block category • Save a project

Programming Blocks Introduced in this Lesson	
<ul style="list-style-type: none"> • Right • Left • Up • Down • Bigger • Smaller • Visible • Invisible 	

Additional Materials: Rule board

Schedule

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Introduction (2.5 minutes): The lesson should begin with the teacher introducing him/herself to the class. The teacher should explain why s/he would like to teach the students about programming. S/he should briefly ask students what they know about programming.

Simon Says (10 minutes): The teacher should play Simon Says with the class. S/he should discuss how this activity is dependent on properly being able to give and follow instructions. S/he should then explain how providing clear instructions is critical to computer programming.

Program the Teacher (15 minutes): In this activity, students will be responsible for verbally directing their teacher to special destinations in the classroom (e.g. to a bookcase or a closet). The instructions the students give to the teacher must be specific. For example, students should not simply say, "Move forward." They should instead say, "Move forward ____ steps." When sequences of instructions do not work (perhaps because the number of steps taken were incorrect), students should alter their instructions. After the activity is over, the teacher should discuss how important it is to be specific and how important order is in programming. *2nd grade: Small groups determine a sequence of instructions*
Kindergarten and 1st grade: As a class

Classroom Rules (5 minutes): The teacher should explain to students how important it is to respect each other and the equipment used in the classroom. With the students, s/he should create a list of classroom rules governing iPad use. The teacher should write these rules down on the rule board, and hang these rules in the classroom every time the class is working with ScratchJr.

Materials: Rule board

Getting Started with ScratchJr (2.5 minutes): The teacher should **hand out the iPads** to the children, and show them how to begin a new project in ScratchJr.

Using ScratchJr Blocks (10 minutes): Everyone in the class should watch the teacher as s/he moves a motion block (right, left, up, down) to the scripting area and presses the block to make the Scratch cat move. The children should duplicate this task. The teacher should request that students raise their hands when they are finished with this task. Do this for each motion block. Do the same for the resize blocks (bigger and smaller) and visibility blocks.

ScratchJr Exploration (10 minutes): The teacher should encourage students to explore the application by placing blocks in the scripting area and seeing where the cat moves.

Wrap Up (5 minutes): The teacher should demonstrate how to save a project. Every child should save his project. The teacher should provide students with a brief explanation of what will occur during the next lesson. Collect iPads.



Lesson 2: Motion

Summary

Students will review the concepts of instructions and sequences. They will learn how to create sequences of the same motion block (e.g. left, left, left). They will also learn to create sequences using a variety of different motion blocks (e.g. right, down, jump, go home).

Objectives <i>Students will learn that the ...</i>	Objectives <i>Students will be able to...</i>
<ul style="list-style-type: none"> • Number of motion blocks in a programmed sequence corresponds to the number of actions performed by a character • Order of commands in a programmed sequence directly corresponds to the order of actions performed by a character 	<ul style="list-style-type: none"> • Combine different motion blocks into programmed sequences

New Programming Blocks
<ul style="list-style-type: none"> • Jump • Go Home • Reset Size • Turn clockwise • Turn counterclockwise

Schedule

Review (5 minutes):

- During our last lesson, we played Simon Says. What did you learn from that activity?

- When you programmed your teacher, you had him/her go to a certain spot in the classroom. How did you get your teacher from one spot in the classroom to another? What did you find hard about this activity?
- What is a program?
- We also worked with ScratchJr on the iPad. What was something you liked? What was something hard?

Kindergarten

Programmer Says (5 minutes): The directions for this game are the same as those for Simon Says, except sequences of three instructions are given (e.g. step forward, step back, jump). The teacher should emphasize the importance of following directions and the order of instructions.

1st and 2nd grade

Guess the Program (5 minutes): The teacher should act out several short programs. Students should then be given the opportunity to guess what the program acted out is (e.g. step forward, step back, jump).

All grades

Program the Teacher (15 minutes): Students will be responsible for directing their teacher to a specific location in the classroom. However, during this lesson, students will only be able to use a specific set of possible instructions instead of simply using plain English. Examples of these specific instructions are:

- Step forward
- Step backward
- Turn right
- Turn left
- Turn until you see something

This activity will work the same way as it did in the prior lesson. However, this time students are encouraged to use this exact instruction set.

Introduction to New ScratchJr Blocks (10 minutes): The teacher should demonstrate to children how to use the following blocks:

- Hop
- Go Home
- Reset Size
- Turn clockwise
- Turn counterclockwise

Materials: iPad for teacher only.

Sequencing in ScratchJr (10 minutes): The teacher should begin a new project in ScratchJr. S/he should place the Scratch cat and the treasure chest characters on the same line on the screen (on a horizontal or vertical line).

S/he should then ask students which blocks need to be placed next to each other in order for the cat to successfully move toward the treasure chest. Three different scenarios should be set up (e.g. cat in the upper left corner and treasure chest in lower left corner; cat in the lower left corner and the treasure chest in the bottom right corner) for the students to solve together as a class.

Materials: iPad for teacher only.

ScratchJr Exploration (10 minutes): The teacher should then **hand out the iPads** and allow students to explore the ScratchJr iPad application. Encourage them to experiment with recently learned blocks, as well as with blocks that have not yet been taught. Have them practice putting different programming blocks next to each other to make the cat move in different directions.

Wrap Up (5 minutes): Make sure that students save their projects. Provide a preview of what will be taught in the next lesson. Collect iPads.



Lesson 3: Green Flag, End Block, Choosing Characters

Summary

In this lesson, students will learn to use the start on green flag and end blocks, as well as how to choose new characters. Through various interactive activities, children will learn how to incorporate the green flag and end blocks into their programs, and will also become familiar with how to program more than one character using the green flag.

Objectives <i>Students will learn that...</i>	Objectives <i>Students will be able to...</i>
<ul style="list-style-type: none"> · A green flag goes at the beginning of a sequence of programming blocks · A red end block goes at the end of a sequence of programming blocks · Multiple programs can take place at once 	<ul style="list-style-type: none"> · Program a character to start when the green flag is touched · Use the end block to signify the end of a program · Choose a new character · Program multiple characters to start when the green flag is touched

New Programming Blocks

- Start on Green Flag
- End

Additional Materials: Green flag card, red stop sign card

Schedule

Review (5 minutes):

- Can someone tell me what we learned during our lessons last week?
- What was your favorite activity that we played? What did you learn from it?
- Can you tell me what a program is?
- What were some of the ScratchJr blocks you learned about?

Kindergarten

Instruction Stations (10 minutes): Split the class into four groups and assign them to four different stations. Each station will correspond to an instruction to follow (e.g. clap your hands, stomp your feet, jump up and down, tap your hands on your head). When the teacher raises the green flag card, students follow the instruction at their station. They stop when the teacher raises the red stop sign card. Students should then rotate to a different station. Repeat this activity until all students have moved through each station once. The teacher should explain how the green flag signifies the start of a program, while the red stop sign signifies the end of a program.

Materials: Green flag card, red stop sign card

Program the Teacher (10 minutes): Students should program their teacher to arrive at a particular destination in the classroom. In order for the teacher to begin following directions, students must hold up the green flag card. When the teacher is finished following instructions, students should hold up the red stop sign card.

Materials: Green flag card, red stop sign card

1st and 2nd Grade

Program the Teacher(s) (20 minutes): Begin by programming the teacher as has been done in prior lessons. Begin with an easy program (have the teacher arrive at a nearby location). Then program the teacher to arrive at a location that is farther away and has obstacles to move around. Afterwards, have students program two teachers to arrive at two different locations. Introduce the idea of the green flag and red blocks. Then have both teachers

follow their program when the green flag card is held up, and end their program when the red stop sign card is held up.

Materials: Green flag card, red stop sign card

All

Choosing Characters (2 minutes): Demonstrate to children how to choose a new character from the character library. Also make sure to teach them how to delete a character (by holding a finger on the character until an “x” appears and then pressing the “x”).

Programming with ScratchJr (15 minutes): The teacher should **hand out the iPads** and then write a program for students to copy onto their own iPads. Begin with a simple warm up program that does not introduce new blocks. Then create a program for children to copy that uses the start on green flag and end blocks. Lastly, create a program for children to copy that involves programming two different characters. Now encourage students to write their own programs for two different characters.

ScratchJr Exploration (15 minutes): Allow students to explore the ScratchJr iPad application. Encourage them to experiment with programming more than one character at a time.

Wrap Up (3 minutes): Make sure that everyone saves their projects. Ask students what they learned today. Also ask students what the purpose of the start on green flag is. Collect iPads.



Lesson 4: Choosing Backgrounds and Review of Multiple Characters

Summary

In this lesson, students will learn how to choose and create different backgrounds for their projects. They will also review how to program multiple characters at once. During the lesson, children will have the opportunity to explore ScratchJr on their iPads, practicing the skills that they have acquired during prior lessons.

<p>Objectives <i>Students will learn that...</i></p>	<p>Objectives <i>Students will be able to...</i></p>
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<ul style="list-style-type: none"> · They can use backgrounds in their projects · That they can create their own backgrounds 	<ul style="list-style-type: none"> · Use and create backgrounds in their projects · Review how to program multiple characters at once
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Schedule

Review (5 minutes):

- What was your favorite activity that we played during our last lesson?
- What does the green flag do when it is included in a program?
- What does the red end block tell a sequence of instructions to do?
- Which block do you enjoy using most? Why?

Design the Program (10 minutes): During this activity, the teacher should ask students to help him/her program two different characters on his/her iPad. S/he should provide the students with one scenario for each character (e.g. have one character move up five spaces and then jump three times, while the other character jumps five times and then disappears). The teacher should then ask students to tell him/her which blocks to place down for each character. *Remember to use the green flag and red end blocks.*

Materials: iPad for teacher only

ScratchJr Detectives (15 minutes): During this activity, the teacher should create a program for two different characters. Then in full screen mode, s/he should show the students what the characters are doing. *Note: the teacher should not show the students which programming blocks were used.* **Hand out the iPads.** The teacher should then ask the students to figure out which programming blocks s/he used to create those two programs by duplicating the sequence on their own iPads. Complete this activity twice with two different programs for the characters.

Backgrounds (5 minutes): The teacher should demonstrate to children how to choose backgrounds for their projects. S/he should also show students how they can create their own backgrounds using the iPad camera.

iPad Exploration (20 minutes): Allow students to explore the ScratchJr iPad application. Encourage them to practice using blocks that they have already learned, as well as explore programming blocks that they have not yet learned.

Wrap Up (5 minutes): Make sure that everyone saves their projects. Collect iPads.



Project 1: Collage

Summary

On Collage Project Day, students will be creating their own collages on ScratchJr. The lesson will begin with a brief introduction to a ScratchJr collage and a review of the programming blocks learned in prior lessons. During the lesson, students will design and create their own collages. At the end of the lesson, students will share their creations with the class.

Objectives <i>Students will learn...</i>	Objectives <i>Students will be able to...</i>
<ul style="list-style-type: none"> · What elements should be a part of their collages 	<ul style="list-style-type: none"> · Apply concepts from prior lessons when creating collages

Schedule

Introduction (2 minutes): What is a Collage on ScratchJr?

The teacher should explain to students that during this lesson, they will design their own collages. A collage on ScratchJr is a free-form project that has various characters moving on the screen. The characters in a ScratchJr collage have no clear course of action, and are simply moving or transforming.

Review (5 minutes):

The teacher should briefly review the programming blocks learned in prior lessons. S/he should show the blocks on the screen, and ask the students to verbally describe what each block does. These blocks are:

- Right
- Left
- Up
- Down
- Turn clockwise
- Turn counterclockwise
- Hop
- Go Home
- Grow
- Shrink

- Reset Size
- Show
- Hide
- Start on Green Flag
- End

Materials: iPad for teacher only

Collage Design and Creation (40 minutes):

Hand out iPads. Students should spend about 40 minutes designing and creating their own collages. They should be encouraged to choose or create their own backgrounds, and to program multiple characters. Students should only use programming blocks taught in prior lessons when designing these collages.

Note: The collage can be tailored to fit into the current curriculum being taught in the classroom. For example, if the class is currently learning about outer space, the collage can be made using only items associated with space.

Sharing (13 minutes):

Students should be encouraged to share their collages with the rest of the class. They should explain which blocks they used to create their collage, and what is occurring on the screen. Collect iPads.



Lesson 5: Speed

Summary

In this lesson, children will be introduced to the concept of speed in the ScratchJr iPad application. Through interactive activities, students will acquire an understanding of this concept and how to apply it in ScratchJr. During the lesson, students will be able to create their own projects using concepts learned in this and prior lessons. The lesson will conclude with an opportunity for students to share their projects.

<p>Objectives <i>Students will learn that...</i></p>	<p>Objectives <i>Students will be able to...</i></p>
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<ul style="list-style-type: none"> · The speed of characters can be changed · Different characters can be programmed to move at different speeds 	<ul style="list-style-type: none"> · Program characters to move at different speeds
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<p>New Programming Blocks</p>
<ul style="list-style-type: none"> · Speed

Schedule

Review (2 minutes):

- Last time we worked on ScratchJr, we created collages. Can you tell me what a collage is?
- What are two blocks you used in your collage?

Programming Block Review (8 minutes): During this activity, the teacher should place the Scratch cat on the screen and say, “I would like my cat to jump up and down. Which block would make the cat do this?” The children should then describe the block and how to find it in the program. This should be repeated for all of the blocks learned until now. *Materials: iPad for teacher only.*

Jungle Speed (10 minutes): During this activity, students will work as a class to order groups of animals or insects based on how fast they move (from fastest to slowest). Write groups of animals on the board for students to verbally put in order of speed of movement. Examples of groups of animals may include:

1. Cheetah, snail, rabbit, hamster
2. Dog, ant, lion, guinea pig
3. Turtle, zebra, cat, monkey
4. Jaguar, lobster, snake, centipede

A discussion should follow that discusses how characters in ScratchJr can be made to move at different speeds. The teacher should introduce the speed programming block and demonstrate how to use it on the ScratchJr application.

<ul style="list-style-type: none"> • Numbers can be used on motion blocks • Numbers can reduce the number of blocks needed • Programs can be repeated for a specified number of times • Programs can be repeated forever 	<ul style="list-style-type: none"> • Use numbers on motion blocks to reduce the number of blocks needed • Use the repeat and repeat forever blocks to make a program repeat
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<p>New Programming Blocks</p> <ul style="list-style-type: none"> • Repeat • Repeat forever

Schedule

Review (2 minutes):

- What was your favorite part of our last lesson? What did you learn from it?
- What does the speed block do? What color is it?
- If you want to program more than one character at once, what block do you need to use?

Why numbers? (10 minutes): The teacher should ask for a student volunteer. Once a volunteer is chosen, the teacher should instruct the student privately to listen to the directions s/he gives, and jump the wrong number of times. For example, s/he should say to the student, “I want you to jump, jump, jump, jump, jump, jump, jump.” The student should then jump the wrong number of times. The teacher should repeat the directions, and the student should again jump the wrong number of times. After doing this, the teacher should ask the class how this instruction could be clearer (e.g. by saying, “I want you to jump seven times). The teacher should then explain the concept of putting a number under a programming block, instead of putting that same block down multiple times. S/he should show how to do this on the iPad.
Materials: iPad for teacher only.

Why repeat? (8 minutes): The teacher should ask for a student volunteer. S/he should say to the student, “I want you to jump, tap your head, and clap your hands.” The teacher should say this instruction to the student multiple

<ul style="list-style-type: none"> · Sounds can be added to ScratchJr · Characters can speak to each other through speech bubbles · Multiple pages can be added to a project <ul style="list-style-type: none"> · A program can be paused for a certain amount of time 	<ul style="list-style-type: none"> · Record sounds and add them to projects · Create speech bubbles for characters · Add additional pages to a project · Pause their programs for a certain amount of time
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<p>New Programming Blocks</p>
<ul style="list-style-type: none"> · Voice recorder · Speech bubble · Change page · Wait for

Schedule

Review (5 minutes):

- What activities did you participate in during our last lesson? What did you learn from those activities?
- What does the repeat block do?
- What color is the repeat block?
- What happens when you change the number on the repeat block?
- Which blocks are you able to change the numbers on?

“Scratch-lib” (25 minutes): During this activity, the teacher should project his/her iPad onto the board. S/he should create a simple sequence with motion blocks and a speech bubble and a sound. The teacher should then demonstrate how to use these two new blocks. **Hand out the ipads.** The class will copy this sequence onto their own iPads. They then have the liberty to insert their own text or sounds into the blocks.

After the students have completed this task, the teacher should continue by teaching students how to add a page to a project. S/he should also make sure that students understand that to continue a story, an “end block” with a picture of the next page must be inserted at the end of the program on the prior page. The children should then add a page to their

stories, and insert the sounds or texts they would like.

Note: Kindergarten students may have difficulty typing words. Consider writing words that they can use in their story on the board for them to copy down.

Sharing (10 minutes): After students have finished their “Scratch-libs” they should be given the opportunity to share their projects with the rest of the class. Students should try to explain what they created and which blocks they used.

Wait! (5 minutes): The teacher should introduce the students to the “wait for” block. The “wait for” block pauses a program for a certain amount of time determined by the number entered on the block. The “wait for” block can be used, for example, to slow down the program before going to the next page of a story so that there is a pause in the action between one scene and the next.

Option: iPad exploration or continuation of story (10 minutes)

Provide students with the opportunity to

1. Explore on the iPads by creating a new project, or
2. Continue working on the project started that day

Wrap-up (5 minutes): Make sure that students save their programs. Collect iPads.



Project 2: Story

Summary

The Story Project will take two sessions. Each Project Day will take one hour to complete. On the first Story Project Day, students will learn about the elements of a story. They will then spend the remainder of the lesson designing their own stories. On the second Story Project Day, students will spend the entire lesson creating and sharing their stories with the class.

<p>Objectives <i>Students will learn...</i></p>	<p>Objectives <i>Students will be able to...</i></p>
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· What elements are part of a story	· Apply concepts from prior lessons when creating their own stories
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Additional Materials: Storybook

Schedule (Story Project Day 1)

Kindergarten

Introduction (10 minutes): What is a story?

The teacher should read a short story to his/her students. S/he should try to choose a story that has characters that are in the character library of the ScratchJr application. S/he should ask students what characters are in the story and where the story takes place. S/he should also explain that a story has a beginning, middle, and end. When creating their stories, the kindergartners should use the characters they read about in the story.

Materials: A storybook

1st and 2nd Grade:

Introduction (10 minutes): What is a story?

The teacher should choose a story that the class has recently read together (s/he should *not* read it to them). S/he should ask students to describe the characters in the story and the setting of the story. The teacher should explain that a story has a beginning, middle, and end. S/he should then ask students to briefly describe the beginning, middle, and end of the story they are discussing.

All

Review (5 minutes):

The teacher should briefly review the programming blocks learned in the second module's lessons. S/he should show the blocks on the screen, and ask the students to verbally describe what each block does. These blocks are:

- Speed
- Repeat
- Repeat forever
- Voice recorder
- Say
- Change page
- Wait

Materials: iPad for teacher only.

Story Design and Creation (35 minutes):

Students should spend about 35 minutes designing and creating their own stories (kindergarteners should use the characters they read about in the story just read to them). **Hand out the iPads individually** after a student shows a reasonably detailed design. Students should be encouraged to use three pages in their stories – one each for the beginning, middle, and end. They should also be encouraged to choose or create their own backgrounds, program multiple characters, and use the record and speech blocks.
Note: The story can be tailored to fit into the current curriculum being taught in the classroom.

Sharing (10 minutes):

Students should be encouraged to share their stories with the rest of the class. They should explain which blocks they used to create their stories, and what is occurring on the screen. Collect iPads.

Schedule (Story Project Day 2)

Story Design and Creation (45 minutes):

Hand out the iPads. On the second Story Project Day, students can either continue the story they started during the last lesson, or they can start a new story.

Sharing (15 minutes):

Students should be encouraged to share their stories. They should explain what is occurring in their story, and where the idea for their story came from. Collect iPads.



Lesson 8: Start on Bump, Start on Tap, Send and Receive Messages, Stop

Summary

Through various activities in this lesson, students will be introduced to the start on bump, start on tap, send and receive message, and stop blocks. After learning how to use these new blocks, students will have the opportunity to explore ScratchJr and apply the concepts just learned.

<p>Objectives <i>Students will learn that...</i></p>	<p>Objectives <i>Students will be able to...</i></p>
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<ul style="list-style-type: none"> · A character's program can be activated when the character is bumped by another character · A character's program can be activated when the character is tapped · Characters can send and receive messages that activate their program · Programs can be terminated 	<ul style="list-style-type: none"> · Use the start on bump block to activate another character's program · Use the start on tap block to activate a character's program · Use the send and receive message blocks to initiate another character's program · Terminate particular characters' programs
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<p>New Programming Blocks</p>
<ul style="list-style-type: none"> · Start on bump · Start on tap · Send message · Receive message · Stop

Schedule

Review (5 minutes):

The teacher should review some of the recently learned programming blocks with students. S/he should project the iPad onto the board, and show students the various programming blocks. S/he should ask them to verbally describe what each block can be used for. *Materials: iPad for teacher only.*

Scavenger Hunt (7 minutes): With the class, the teacher should list ten objects that can be found in the room (e.g. red marker, backpack, eraser). S/he should explain to the class that one child is to retrieve the first object on the list from its location in the room. Once the student has obtained the object, s/he is to high-five another student in the class, who will then go and retrieve the next object on the list. Continue this process until all of the objects on the list have been retrieved. The teacher should then explain how this activity relates to the start on bump and start on tap block.

iPad Demonstration (15 minutes): The teacher should demonstrate how to use the start on bump and start on tap blocks. In these demonstrations, s/he should use characters that complement each other, so that it is clear who is

receiving the “bump” or “tap.” Such pairs may include:

1. Magician and dragon
2. Frog and fly
3. Sun and moon

After the teacher has demonstrated how to use these two blocks, s/he should **hand out the iPads**. The students should be given the opportunity to practice these blocks using two characters that the teacher chooses.

“Three, two, one, blast off” (15 minutes): During this activity, the teacher should project the Scratch cat and the rocket onto the board. S/he should show the cat counting down “Three, two, one” and then have the spaceship “take off” by moving upward. After this demonstration has occurred, the teacher should show the children the programming blocks that made this occur. S/he should show students how to use the send and receive message blocks, and how the message colors must match each other in order for the message to occur. Students should then be given the opportunity to recreate this demonstration themselves on their own iPads.

Stop! (5 minutes): The teacher should demonstrate how to use the stop block in ScratchJr. The stop block is used to terminate all programs running for a particular character. To teach this block, s/he should have two characters. The first character has two programs: one that repeats forever and a second one that stops when it’s bumped. The second character should have a sequence that repeats forever. For example:

Place the penguin to the right of the cat. The cat will stop moving as soon as it bumps into the penguin, but the penguin will keep jumping forever.

iPad Exploration (13 minutes): Allow children to continue working on their projects. They should be using the blocks learned in this lesson. They should have the opportunity to add new characters and change the background. Collect iPads.



Project 3: Game

Summary

On Game Project Day, students will learn about the elements of games. They will also be shown how to create two different types of games on the ScratchJr application. They will then spend the remainder of the lesson

designing and sharing games.

Objectives <i>Students will learn...</i>	Objectives <i>Students will be able to...</i>
<ul style="list-style-type: none"> · What elements are parts of games · How to create different types of games in the application 	<ul style="list-style-type: none"> · Apply concepts from prior lessons when designing their own games

Schedule

Introduction (5 minutes): What is a game?

The teacher should explain to students that during this lesson, they will design their own games. With the class, the teacher should brainstorm elements of a game (e.g. rules, obstacles, a goal). S/he should write down their ideas on the board.

Example Games (10 minutes):

The teacher should demonstrate two types of games to students that can be made with ScratchJr. *(Note: there are more than two types of games that can be made with ScratchJr.)*

1. **“Make the Cat Come Back”** – The teacher should use the “tap to start” block to make several characters into buttons. S/he should then program *one* character to send a message to a hidden cat so that it reappears. Students should then tap the various characters until the cat reappears.
2. **“Get the Cat to the Birthday Cake”** – The teacher should use the “tap to start” block to make a character into a button. S/he should program the character to send a message to the cat so that the cat will move in the direction of a birthday cake. Have students continue tapping the character until the cat arrives at the cake.

Materials: iPad for teacher only.

Game Design and Creation (35 minutes):

Students should spend about 35 minutes designing and creating their own games. **Hand out the iPads individually** when design is adequate.

Examples of games could include:

1. Creating a maze
2. Having a character collect objects (that disappear when bumped into) on the way to another character

3. Having characters become buttons that send messages to other characters to carry out a sequence

Sharing (10 minutes):

Students should be encouraged to share their games with the rest of the class. Collect iPads.





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