Coding in K-2 with ScratchJr

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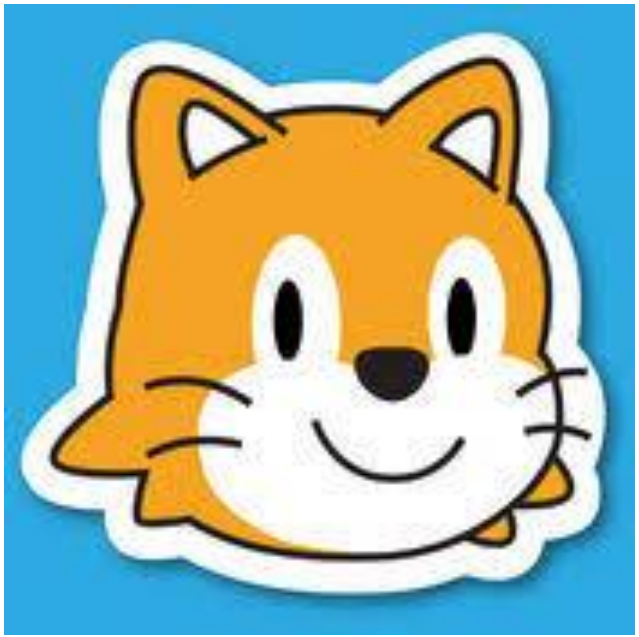


What is ScratchJr?

- Introductory programming language for ages 5-7
- Inspired by Scratch
- Free App for Androids and Ipads
- New Chrome App for Chromebooks

What is ScratchJr?

ScratchJr is a collaboration between the DevTech Research Group at Tufts University, the Lifelong Kindergarten Group at the MIT Media Lab, and the Playful Invention Company.

Why ScratchJr?

As young children code with ScratchJr, they learn how **to create and express** themselves with the computer, not just to interact with it.

- In the process, children **learn to solve problems and design projects**, and they **develop sequencing skills** that are foundational for later academic success.
- They also **use math and language in a meaningful and motivating context**, supporting the development of early-childhood numeracy and literacy.

With ScratchJr, children aren't just learning to code, they are coding to learn.

(Mitchel Resnick, MIT Professor of Learning Research and head of the Media Lab's Lifelong Kindergarten group)

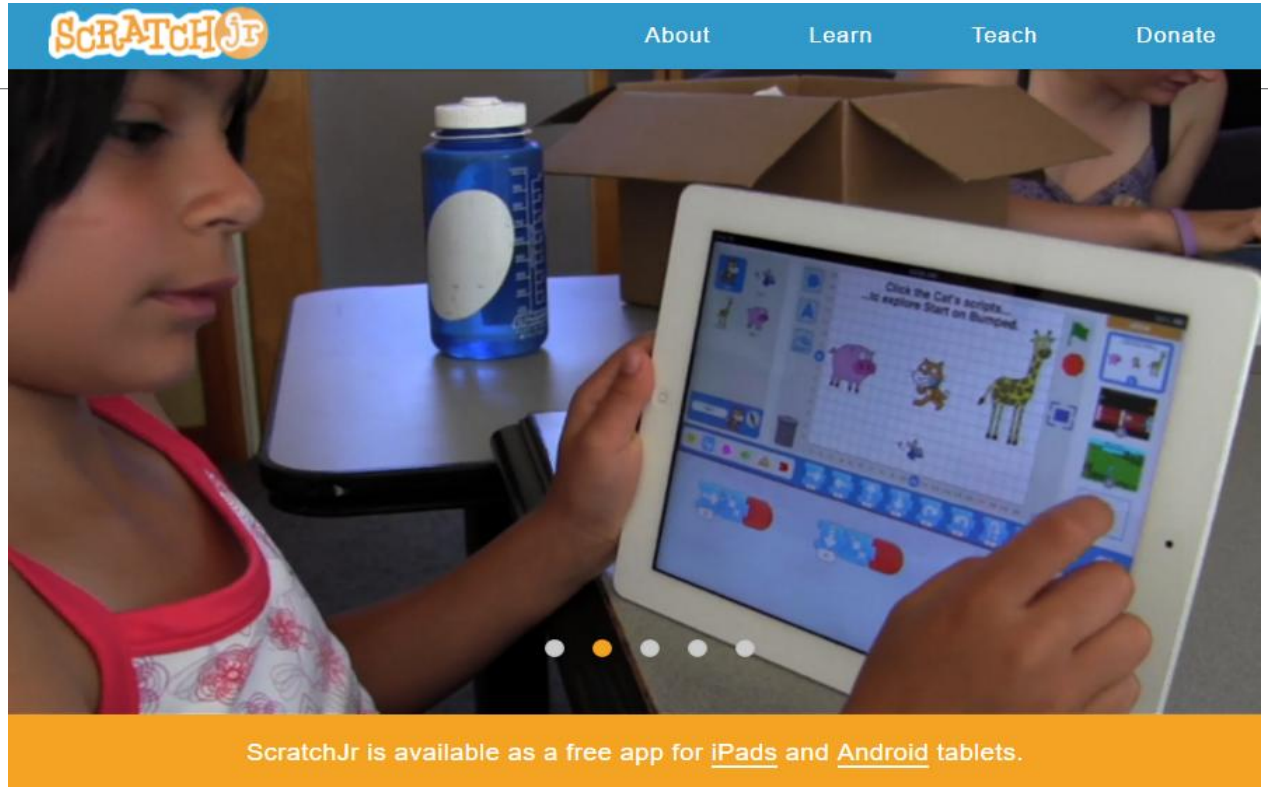
Differences Between Scratch and Scratch Jr.

Scratch	Scratch Jr.
Web based (usually)	Tablet based
Sharing to web option	Sharing only through email
More than 40 language options	Seven language options
Online collaboration	No online collaboration
Ten categories of blocks	Six categories of blocks

Introductory Video

ScratchJr Website

https://www.scratchjr.org/index.html



ScratchJr is available as a free app for iPads and Android tablets.

ScratchJr

Coding for young children

Coding is the new literacy! 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.

Download on the App Store

GET IT ON Google play

available in the chrome web store

Available at amazon

www.Scratchjr.org

News

ScratchJr is now available in Spanish for Android and iOS tablets!

No Starch Press has re-released The Official ScratchJr Book in Spanish in paperback and ebook format.

Join the Discussion

We introduced ourselves. Now it's your turn. Drop us a line with feedback, report bugs & glitches, or just say "hi!"

Tweet @ScratchJr

ScratchJr Retweeted

Lynn Spady @lynnspady

1st graders can code too @Westgate66 Sharing their @ScratchJr addition math games w/ their friends #kidscancode

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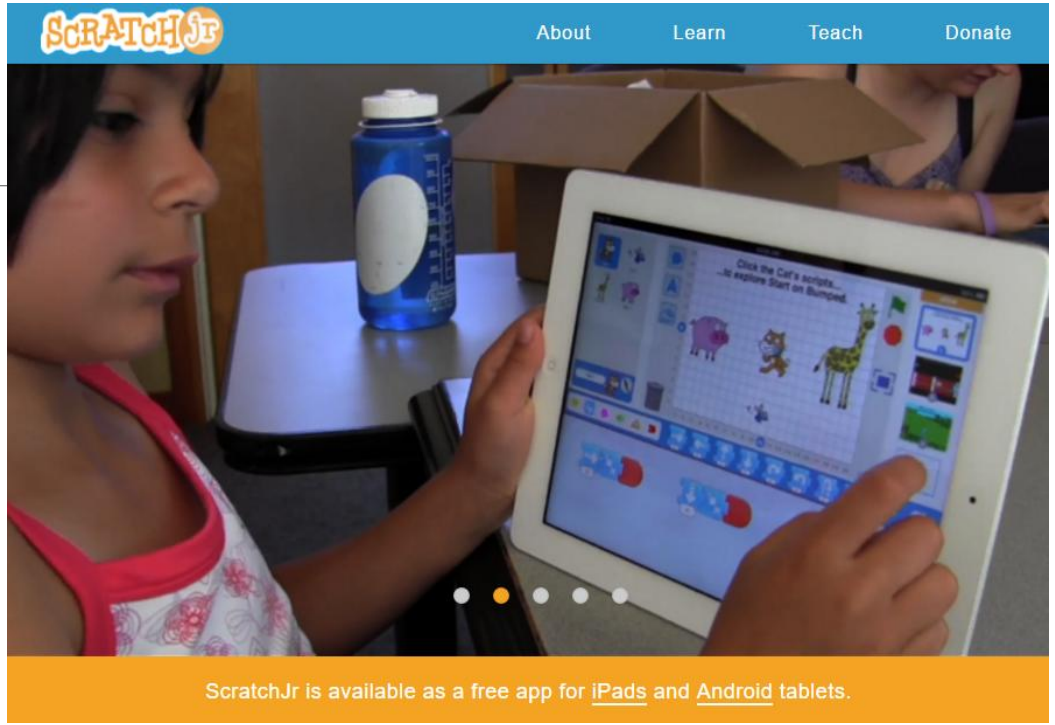
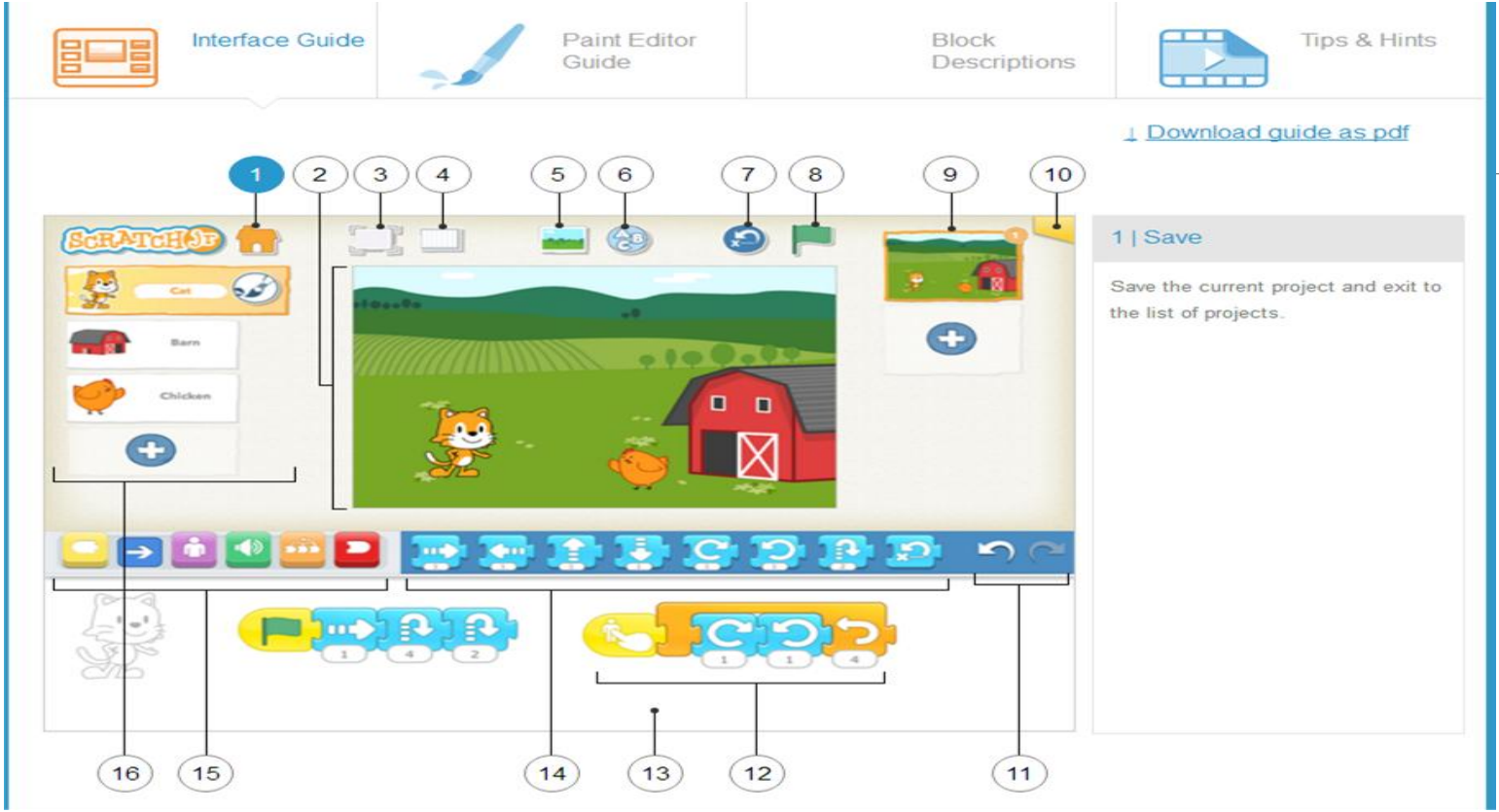
The [**Learn**] Tab provides information about the:

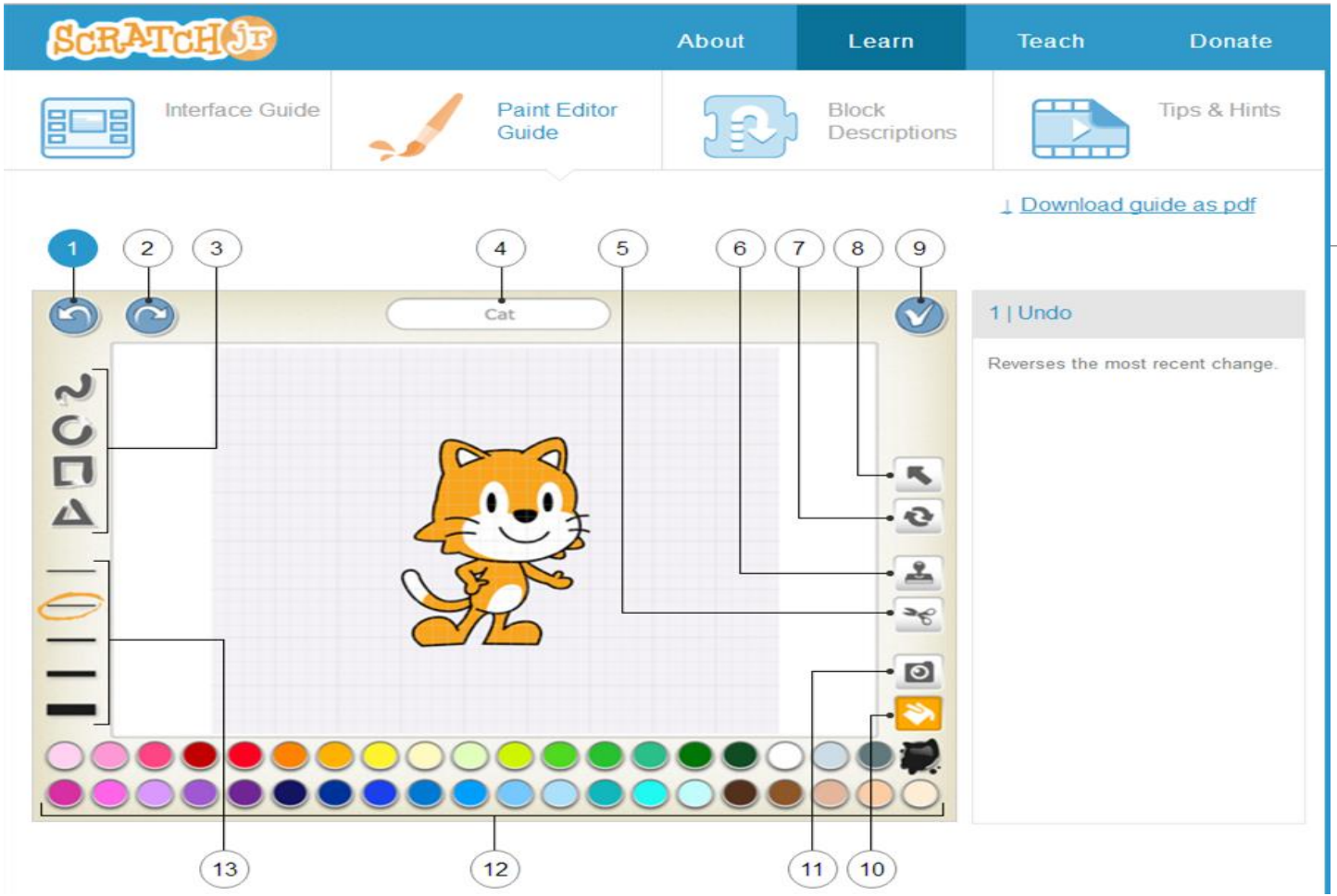
- Interface
- Paint Editor
- Blocks
- Tips & Hints



www.Scratchjr.org



Interface Guide



Paint Editor Guide

Blocks Descriptions - Triggering

Start on Green Flag

Starts the script when the Green Flag is tapped.

Start on Tap

Starts the script when you tap on the character.

Start on Bump

Starts the script when the character is touched by another character.

Start on Message

Starts the script whenever a message of the specified color is sent.

Send Message

Sends a message of the specified color.

Blocks Descriptions - Motion

Move Right

Moves the character a specified number of grid squares to the right.

Move Left

Moves the character a specified number of grid squares to the left.

Move Up

Moves the character a specified number of grid squares up.

Move Down

Moves the character a specified number of grid squares down.

Hop

Moves the character up a specified number of grid squares and then down again.

Turn Right

Rotates the character clockwise a specified amount. Turn 12 for a full rotation.

Turn Left

Rotates the character counterclockwise a specified amount. Turn 12 for a full rotation.

Go Home

Resets the character's location to its starting position. (To set a new starting position, drag the character to the location.)

Blocks Descriptions - Looks

Say

Shows a specified message in a speech bubble above the character.

Shrink

Decreases the character's size.

Hide

Fades out the character until it is invisible.

Grow

Increases the character's size.

Reset Size

Returns the character to its default size.

Show

Fades in the character until it is fully visible.

Blocks Descriptions – Sound and Control

Pop

Plays a "Pop" Sound

Play Recorded Sound

Plays a sound recorded by the user.

Wait

Pauses the script for a specified amount of time (in tenths of seconds).

Stop

Stops all the characters' scripts.

Set Speed

Changes the rate at which certain blocks are run.

Repeat

Runs the blocks inside a specified number of times.

Blocks Descriptions – Ending

End

Indicates the end of the script (but does not affect the script in any way).

Repeat Forever

Runs the script over and over.

Go to Page

Changes to the specified page of the project.

Tips & Hints

Tips & Hints

Tips and hints that you might find useful as you explore ScratchJr. For answers to more general questions about ScratchJr, see the Frequently Asked Questions.

Making, Renaming, and Deleting Projects

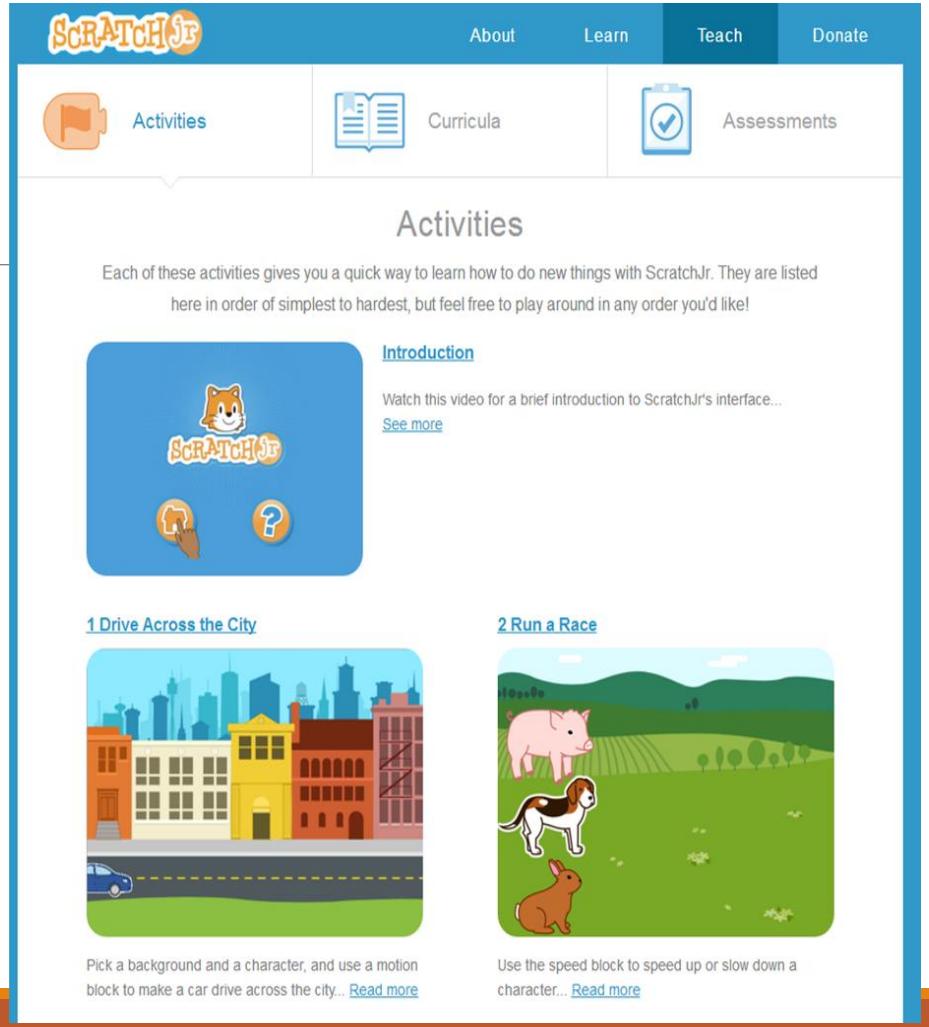
Learn how to make a new project, rename an existing project, and delete a project. Watch video

Character Animation using the ScratchJr Blocks

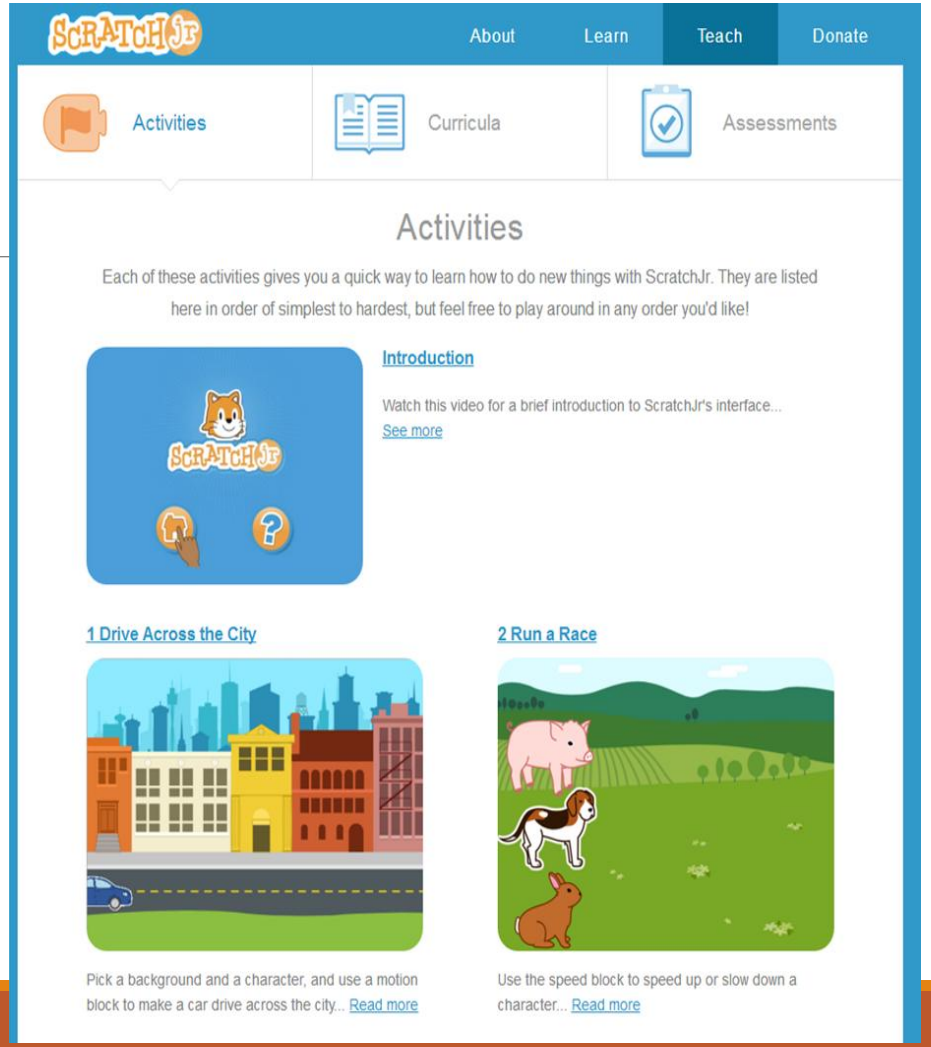
Make a simple script by connecting blocks together. Watch video

The [Teach] Tab provides:

- Activities
- Curricula
- Assessments



Under Activities, you'll find the ScratchJr intro video and several sample activities.

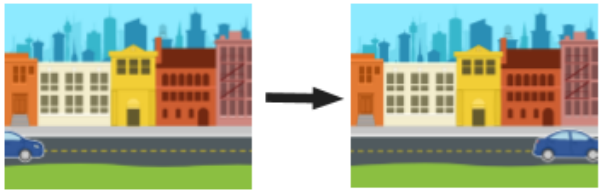


Can I Make My Car Drive Across the City?

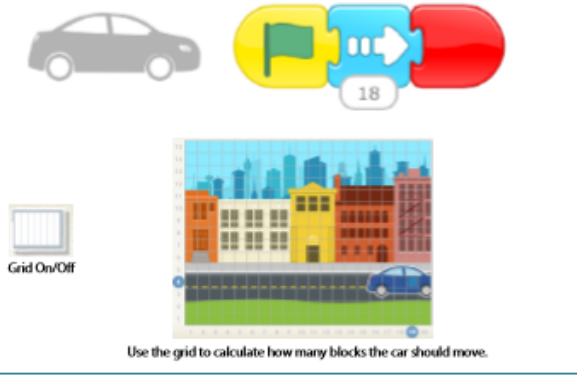
1. Choose Background

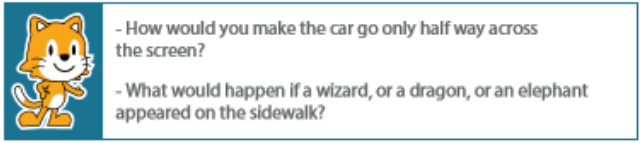
2. Choose Character

3. Resize Character and Move to Start Place



4. Make Programs





- How would you make the car go only half way across the screen?

- What would happen if a wizard, or a dragon, or an elephant appeared on the sidewalk?

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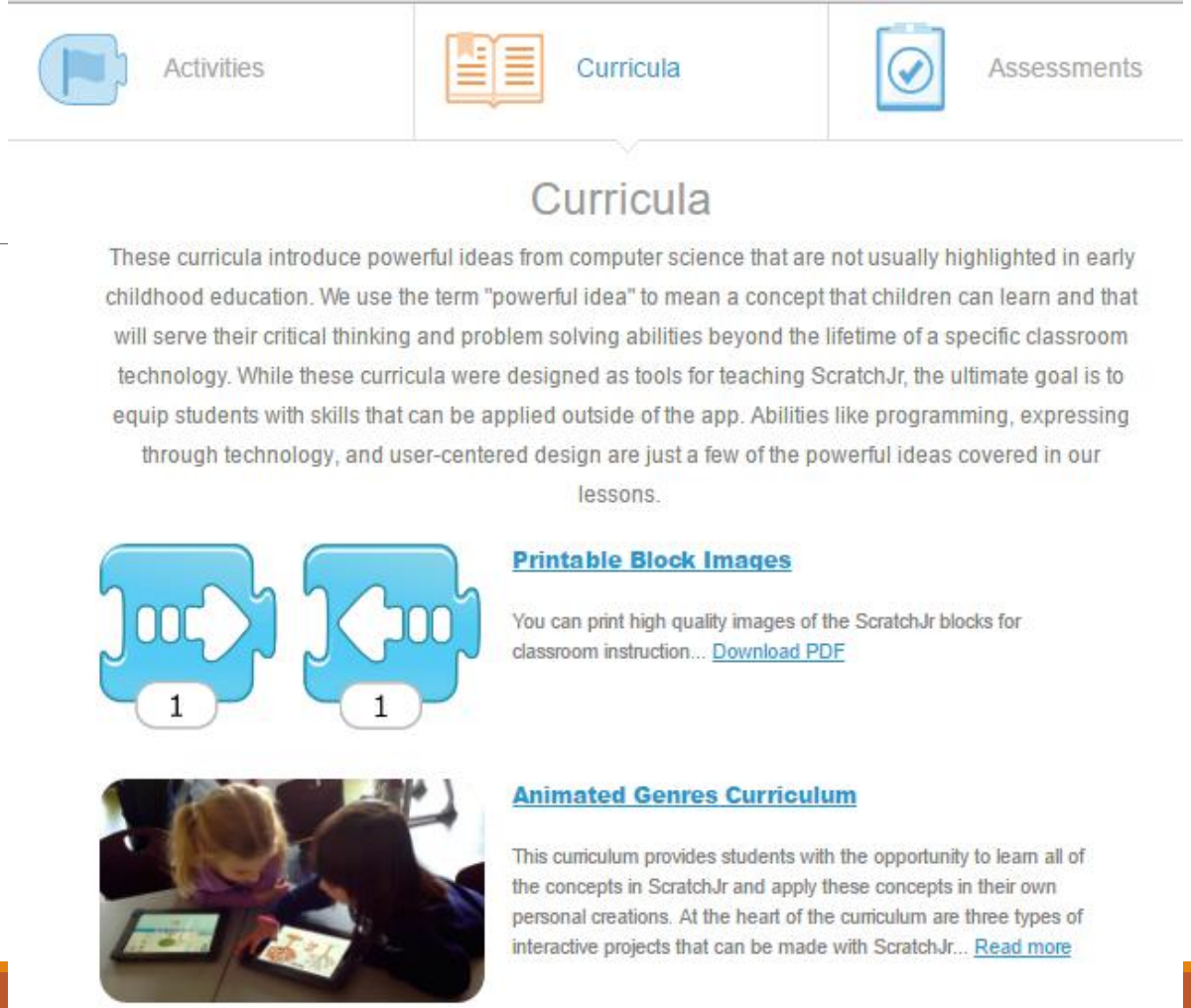
Each activity has a downloadable instruction card.

Under Curricula, you will find block images, and downloadable curriculum guides for:

- Animated Genre
- Playground Games
- Literacy and Math



Each guide contains detailed instructions, including:

- Objectives
- Resources
- Schedule

Animated Genres Curriculum Module 1

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

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.

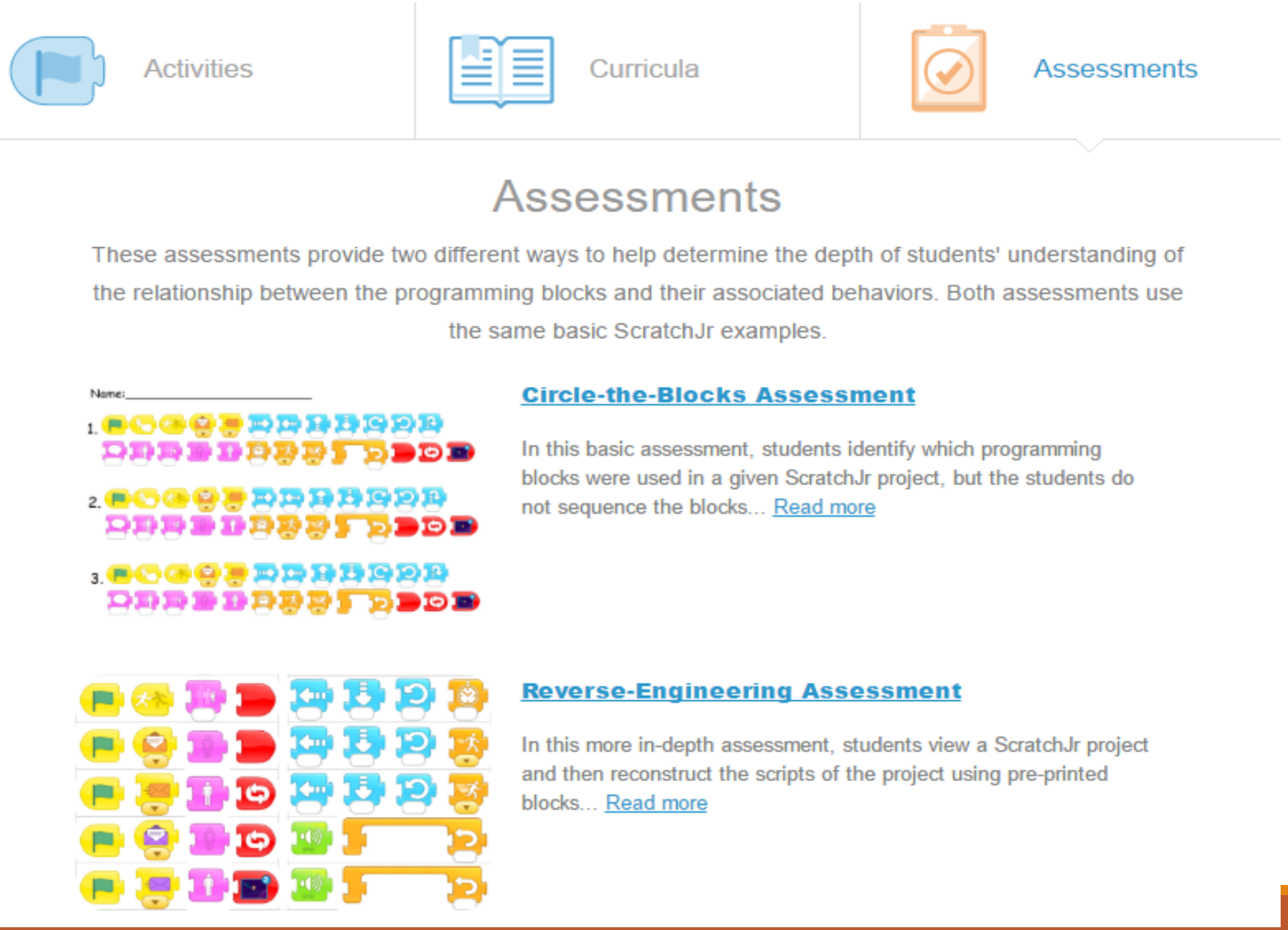
Objectives *Students will learn...*	***Objectives*** *Students will be able to...*
• Appropriate iPad use • The concept of programming • The concept of instructions • The concept of sequencing • The basic features of the ScratchJr interface	General • Give specific instructions • Sequence instructions to achieve simple objectives ScratchJr • 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

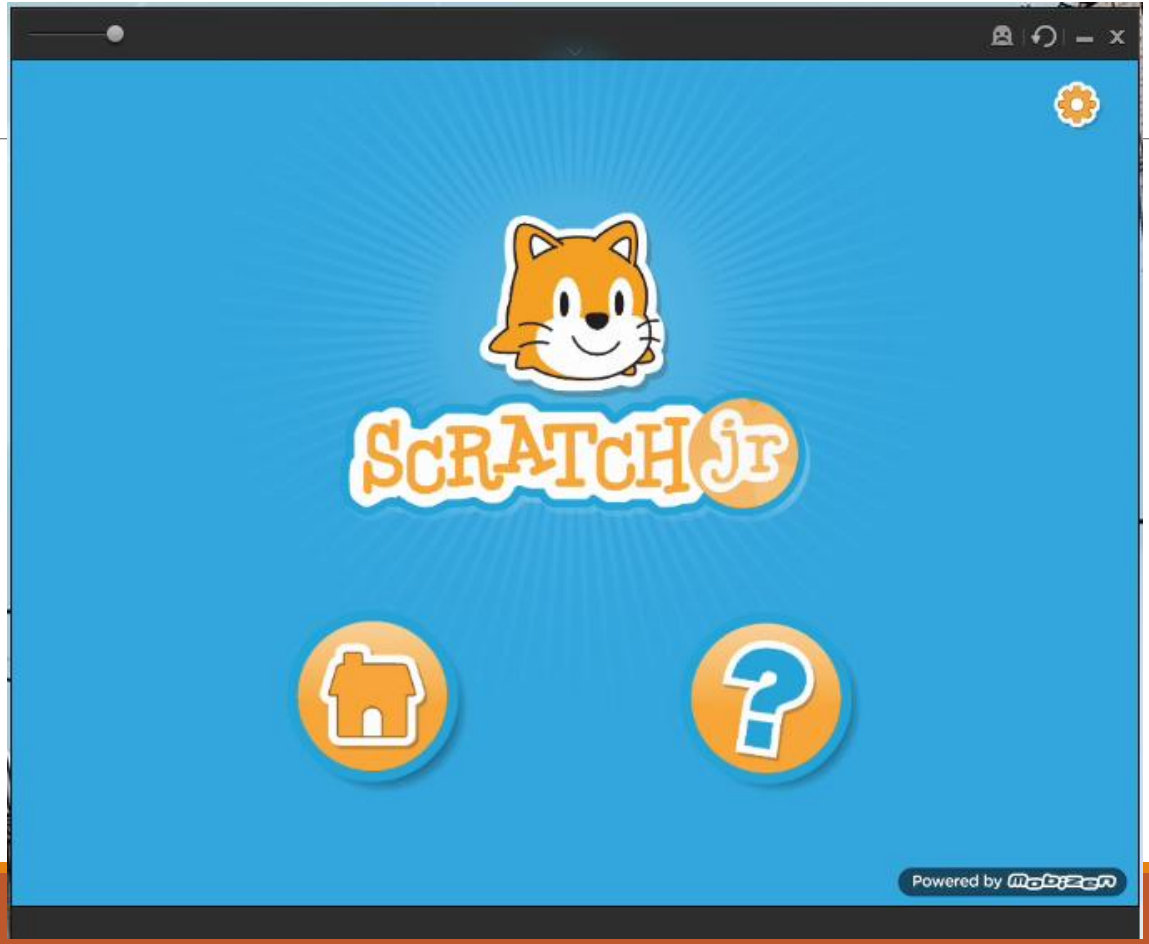
- Right
- Left
- Up
- Down
- Bigger
- Smaller
- Visible
- Invisible

Additional Materials: Rule board

Under Assessments, you'll find two types of student assessments.



Demonstration



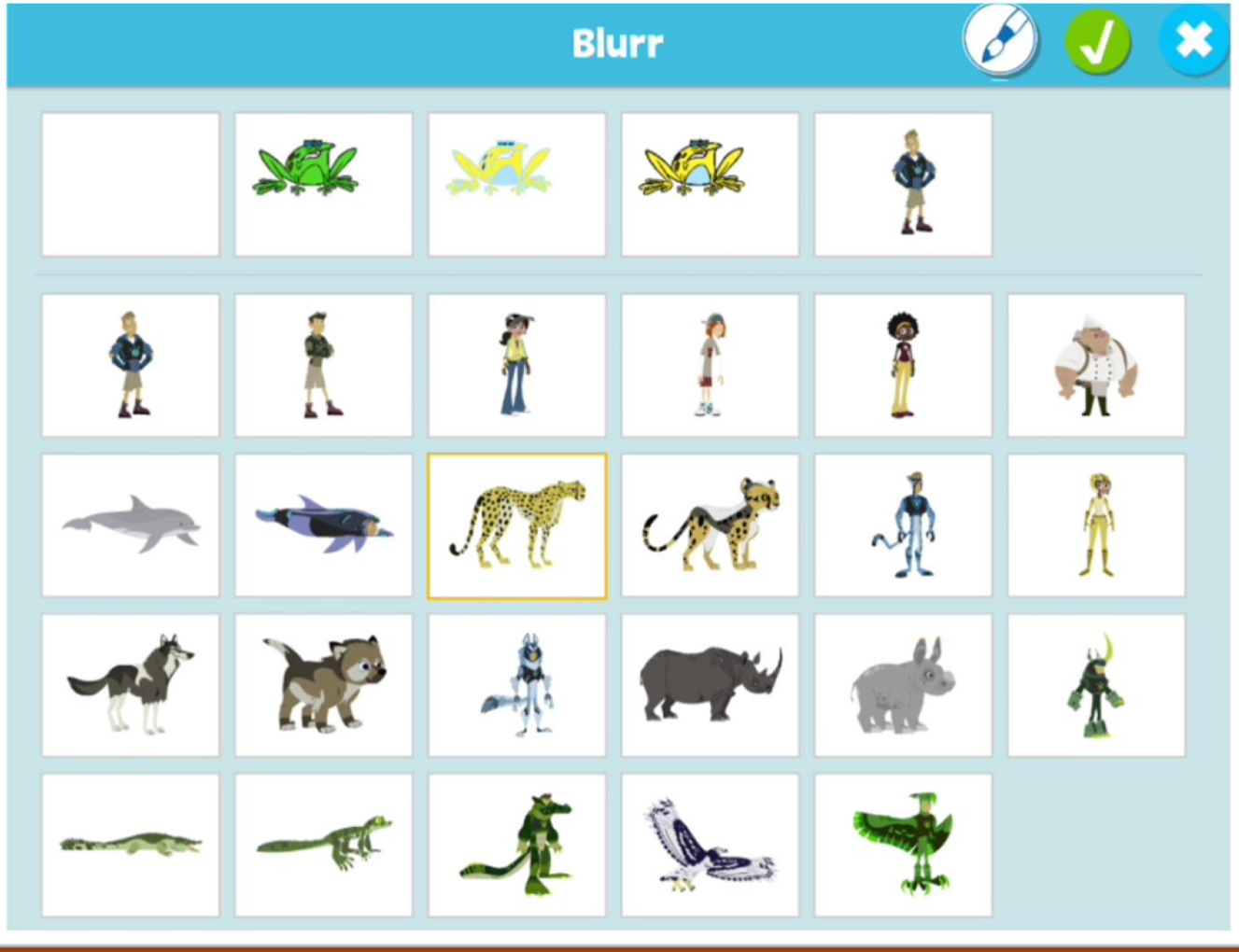
Resources

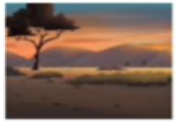
- ScratchJr Website – Guides and discussions
- Code.org – Computational thinking
- PBS Kids ScratchJr – PBS kids characters
- YouTube videos – Playlist of examples and tutorials

PBS Kids ScratchJr

http://pbskids.org/apps/pbs-kids-scratchjr.html

https://play.google.com/store/apps/details?id=org.pbskids.scratchjr&rdid=org.pbskids.scratchjr


Blurr

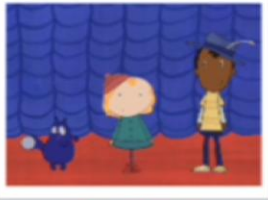


PBS KIDS ScratchJr

Quick Intro to PBS KIDS ScratchJr

Story Starters

Under the Sea



Showtime!

Cheetah Race

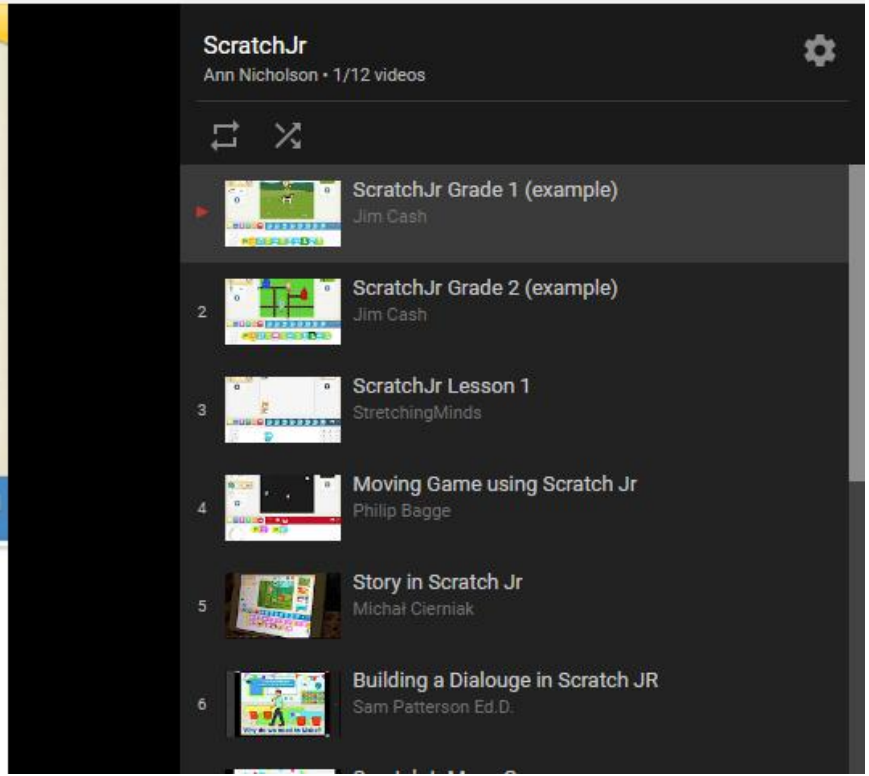
Tag!

Polar Bear Quest

Becky's Dilemma

Creature Rescue

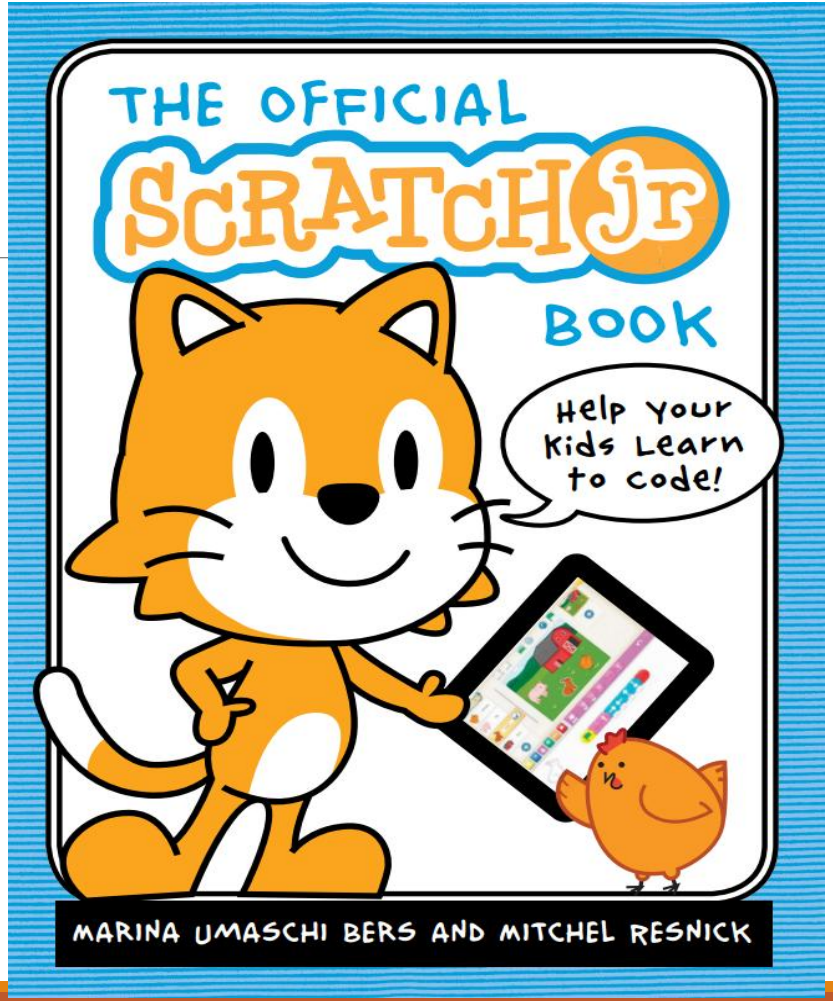
Nature Adventure



YOUTUBE VIDEOS: [SCRATCHJR PLAYLIST]

Resources

The Official ScratchJr Book
from NoStarchPress
https://www.nostarch.com



Research

Bers, M. U., Strawhacker, A. L., & Vizner, M. (in press). The design of early childhood makerspaces to support Positive Technological Development: Two case studies. Library Hi Tech.

Leidl, K., Bers, M.U., Mihm, C. (2017). Programming with ScratchJr: a review of the first year of user analytics. *In the proceedings of the International Conference on Computational Thinking Education, 2017.* Wanchai, Hong Kong.

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Strawhacker, A. L., Lee, M. S. C., & Bers, M. U. (2017). Teaching tools, teachers' rules: exploring the impact of teaching styles on young children's programming knowledge in ScratchJr. *International Journal of Technology and Design Education.* DOI: 10.1007/s10798-017-9400-9

Portelance, D.J., Strawhacker, A., & Bers, M.U. (2015). Constructing the ScratchJr programming language in the early childhood classroom.*International Journal of Technology and Design Education*. pp. 1-16. Online First.

Research

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- Kalogiannakis, M. & Papadakis, St. (2017). A proposal for teaching ScratchJr programming environment in preservice kindergarten teachers. In proceedings of the 12th Conference of the European Science Education Research Association (ESERA), «Research, practice and collaboration in science education». Dublin City University and the University of Limerick, Dublin, Ireland, 21-25 August 2017.
- Papadakis, S., Kalogiannakis, M., & Zaranis, N. (2016). Developing fundamental programming concepts and computational thinking with ScratchJr in preschool education: a case study. International Journal of Mobile Learning and Organisation, 10(3), 187-202.

Questions or Comments?

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- Google scholar: https://scholar.google.gr/citations?user=e3vLZegAAAAJ&hl=el
- Research gate: https://www.researchgate.net/profile/Stamatios_Papadakis
- Academia: https://independent.academia.edu/PapadakisStamatis
- ORCID: orcid.org/0000-0003-3184-1147