Collaborative ScratchJr Project Guide

Coding Multi-Tablet Stories and Games

Created by the DevTech Research Group

What are Collaborative ScratchJr Projects?

When starting out, children often use one tablet to play with ScratchJr. With more complex
programs and more iPads, ScratchJr can be used to make a multi-tablet collaborative project,
an interactive game, or both!

Multi-Tablet Stories

Children can program and create imaginative stories using ScratchJr by snapping together
graphical programming blocks to make their characters come alive. However, their creativity is
limited to the four pages on a single screen. With a multi-tablet collaborative project, the
images and movements can span across multiple screens to make their story even more
dynamic. The characters on each tablet can be programmed to play at the same time or even
staggered to make them appear to move between tablets. Multi-tablet ScratchJr projects can
have one overall theme (e.g. a cultural holiday or dance) or tell an elaborate story (e.g. a
favorite children's book or a memorable event). Anything can come to life with ScratchJr!
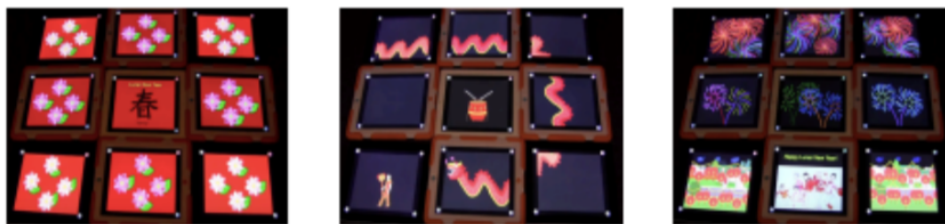
Example #1: Lunar New Year is a festival celebrated in many Asian countries to commemorate
the arrival of spring. Using nine synchronized tablets, the ScratchJr project displays various

aspects of the festival: the blooming of peach and pear flowers, the traditional Dragon Dance,
and the lighting of red lanterns and firecrackers. Watch the full project:
https://youtu.be/YkoWjRtL4tQ

Multi-Tablet Games

Children can interact with ScratchJr and each other while creating and/or playing these
interactive games. The app can be used to create a game where multiple tablets have
characters that interact with the other iPads and with the players. Children can interact with
the characters through taps, dragging them to a certain spot on the screen, or with the green
flag. While children use the iPad as a tool for each game, there should also be some off-screen
component (e.g. collaboration between children or a physical building project related to the
game). Multi-tablet games can have one overall theme, often based on another non-digital
game (e.g. Candy Land or Whac-A-Mole), or a learning goal (e.g. practicing spelling or learning a
language).

Example #1: Wack-animal is an interactive game based on Whac-A-Mole, in which children
score points by tapping animals on iPads set up around a table or room and then tapping a

communal scorecard to indicate that a point was received. Children can play in teams and aim
to score the most points. The game invites collaboration and has sound effects in both Spanish
and English. Watch the full project:
https://drive.google.com/file/d/1dt5mlzgzXR0GCiH1u3fkrsZm1CAAmLjw/view?usp=sharing

Example #2: Animal Puzzle is an interactive game in which 16 children complete three sets of
challenges on individual iPads and are each rewarded with a unique puzzle piece upon
completion. When all of the children obtain their puzzle pieces, they then work together to
assemble them into a complete picture. The challenges and puzzle follow the themes of animals
and learning vocabulary and spelling in both English and Spanish. Watch the full project:
https://drive.google.com/file/d/1AKP6VFu3mmK8vu1cPqozRlgUjBiZ-tly/view?usp=sharing

Learning Outcomes for Children:

Through creating and/or playing with collaborative ScratchJr projects, children will:

- Engage more deeply in the engineering design process (ask, imagine, plan, create, test & improve, share)
- Create more complex and dynamic projects using the ScratchJr app
- Develop greater communication and collaborative skills
- Expand coding potential with ScratchJr

The Positive Technological Development (PTD) framework developed by Dr. Marina Umaschi
Bers outlines six behaviors in children that are supported by using educational technologies:
communication, collaboration, community building, content creation, creativity, and choices of
conduct. Children can work collaboratively on a multi-tablet ScratchJr project and develop the
skills needed to engage in these behaviors.

Learn more about PTD in these books by Dr. Bers: Coding as a Playground: Programming and
Computational Thinking in the Early Childhood Classroom (2018) and Designing Digital
Experiences for Positive Youth Development: From Playpen to Playground (2012).

Creating a Multi-Tablet Story using ScratchJr

1. Choose a topic for your theme or story! Research the topic & brainstorm elements that you could incorporate into your project.
   a. What images and/or scenarios come to mind when you think about this topic?
   b. What activities are happening in the scenario, and where do they happen?
   c. Who or what is involved in the activities?
   d. Are there particular sounds or music that are relevant to the topic?
2. Pick 4-5 ideas from your list that you think would best represent your topic in a creative, playful way. You can of course incorporate more ideas, but it's best to focus on 4-5 things that you can focus on coding uniquely.
3. Plan out your design by drawing a sketch/map, making a bulleted list, etc.
   a. How many tablets will your project have? How will the use of multiple tablets enhance the overall effect of your project?

b. How will you arrange the tablets? Would all of the tablets start simultaneously on the green flag?
c. What characters will you have in your project? Will you create any new characters that do not currently exist on ScratchJr?
d. What ScratchJr blocks might you use in your program?
e. What backgrounds might you use? How many pages will the program have?

4. First create all of your characters on one master tablet. This is so that if you modify an existing character or create a whole new character, you won't have to recreate it on each tablet, saving you lots of time and effort!
   a. If you know that a particular code will be used for multiple tablets, create the code for that character so that it can be shared with the other tablets.

5. Share the project with the other tablets using either AirDrop or email.
   a. It may be helpful to number the tablets in your design plan (i.e. Tablet #1, Tablet #2, etc.). Once you share the project with the other tablets, you can name each project with that same number to keep it consistent.

6. If you are working in a small group, divide tablets or story pages among the group so that everyone has a role.

7. Program the rest of your project on the other tablets.

8. After you finish each page, test it out by running the programs in presentation mode. You may need to go back and adjust the codes, especially your stop and wait blocks.

9. Many trial runs later… run your whole program together and make any final adjustments.

10. Congratulations, you have successfully created a multi-tablet ScratchJr story!

Creating a Multi-Tablet Game using ScratchJr

1. Choose a theme for your project! Research the theme & brainstorm elements that you could incorporate into your project.
   a. What images come to mind for this theme?
   b. What components can be used in a game setting?

     c. Collaborate with peers to settle on a theme.

2. Think of how to incorporate your theme into an interactive and fun game.
    a. Come up with a list of games you like to play with friends (e.g. board or card games, outdoor games, etc.).
    b. Think about how game pieces/toys interact when playing and which interactions could work on an iPad.
    c. Make a list of all the interactive code blocks in ScratchJr ("if touched" or "if green flag pressed"). How will you incorporate the interactive code?

3. Plan out your design by drawing a sketch/map, making a bulleted list, etc.
    a. What is the goal of your game? How do you win? Can you lose?
    b. How many players can play? Is it a fixed number?
    c. Are there sound effects or different backgrounds?
    d. How many tablets will your project have? How will the use of multiple tablets enhance the overall effect of your project?
    e. How will you arrange the tablets? Would all of the tablets start simultaneously on the green flag?
    f. What characters will you have in your program? Will you create any new characters that do not currently exist on ScratchJr?
    g. What ScratchJr blocks might you use for the code?
    h. Are there multiple versions of the game or levels?

4. First create all of your characters on one master tablet. This is so that if you modify an existing character or create a whole new character, you won't have to recreate it on each tablet, saving you lots of time and effort!
    a. If you know that a particular code will be used for multiple tablets, create the code for that character so that it can be shared with the other tablets.
    b. Remember you can use the same code on a different tablet and just change the characters.

5. Share the project with the other tablets using either AirDrop or email.
    a. It may be helpful to number the tablets in your design plan (i.e. Tablet #1, Tablet #2, etc.). Once you share the project with the

other tablets, you can name each project with that same number to keep it consistent.

6. If you are working in a small group, divide tablets or story pages among the group so that everyone has a role.

7. Program the rest of your project on the other tablets.

8. After you finish each page, test it out by running the programs in presentation mode. You may need to go back and adjust the codes, particularly your stop and wait blocks.
   a. Have other people test out your game to give feedback on the clarity of the instructions, ease of play, level of enjoyment, etc.

9. Many trial runs later… run your whole program together and make any final adjustments.

10. Congratulations, you have successfully created an interactive ScratchJr game!

Additional Tips & Resources:

- Characters do not necessarily have to be animate objects – anything can come to life in ScratchJr! Create new characters from scratch, or modify an existing character using the paint editor. The shape tools on the left side of the paint editor are particularly useful for adding new features to your characters. The Duplicate stamp tool on the right side allows you to copy a character or shape, so you can program a set of similar characters with a single set of code (e.g. programming a group of people to cheer on the sidelines).

- To copy one character's code to another character, simply drag the code to the character's box on the left side of the screen. Similarly, to copy a character on one page to another page, drag the character to the page thumbnail on the right side of the screen.

- You may have a clear vision of how to play the game in your mind but remember it isn't as obvious to others. Make sure there are clear instructions. The cat character can always give instructions, or you can add text to the background.

- Need a ScratchJr refresher? Check out these additional resources:

Interface Guide: http://scratchjr.org/learn/interface
Paint Editor Guide: http://scratchjr.org/learn/paint
Block Descriptions: http://scratchjr.org/learn/blocks
Other Tips & Hints: http://scratchjr.org/learn/tips

Acknowledgements: