

The Awesome Game Race

Design Your Own Game

What is a game? How is it different from a puzzle, a toy, or any other fun activity? People don't universally agree on what makes a game, but generally accepted components include rules, decision making, goals, interaction, and potential for change each time the game is played. Youth play games all the time. Now, **SciGirls** challenges them to create their own!

SMART START

- ★ Ask youth to bring in at least one of their favorite games from home¹ (including directions).
- ★ Provide additional tabletop (board or card) games for those who don't bring them.

Watch the SciGirls discuss important aspects of tabletop games in **Game Changers** (Identify & Define).



You'll Need (per small group)

2+ Hours

- paper and pencil
- sticky notes
- markers
- string
- tape
- scissors
- 3" x 5" index cards
- assorted game tokens for players
- paper, various sizes
- 2 or more different games with rules

1. Brainstorm. Since the goal of this activity is to create a game, have the youth work in small groups⁵ to observe how games work. Before playing, they should decide which observations to record about the games they are playing. Here are some things to consider:

- ★ **Mechanics:** How things work and how pieces are used in a game. Examples: how you earn points, pass cards, and roll dice.
- ★ **Goal:** How you win a game or how a game ends. Examples: reaching the end of the board first, earning the most tokens, collecting the most cards.
- ★ **Game pieces:** Items that you use to play a game. (Not all games have pieces.) Examples: dice, player tokens, cards, figurines, and play money.
- ★ **Theme:** The story told in a game. (Not all games have a theme.) Examples: animal adventures, solving a mystery.
- ★ **Game rules:** Instructions for the players on how to play the game. Some games can be played with a regular deck of cards and the instructions for the game are passed down from a person who has played the game before. Other games have their own unique pieces and require complex instructions.
- ★ **Core loop:** The steps in a game that you do over and over while playing. This is the set of things a player does during their turn. For example, roll the dice, move the token on the board, draw a card, play a card, pass dice to next player.

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2. Research. Distribute one game to each small group⁵ and have them read the instructions even if they have played the game many times. Before they begin, have each member of the group select one of the game components to observe. Make sure each person chooses a different component. As they play the game, they should record observations on their chosen component. After 15 minutes, stop playing and discuss:

- a. What mechanics did you observe while playing?
- b. Are there clear goals? How do you know when you win or the game is finished?
- c. What types of game pieces are used?
- d. What was your game about? Did it have a theme?
- e. Can you identify the core loop in the game you played?
- f. Is the game fun or interesting enough that you want to play it again?
- g. Are the rules easy to understand? Do they make sense? Is there anything missing or that could be more specific?

3. Present client information. A company wants to make a new game for first and second graders that two to four children can play and that cannot take more than 15 minutes to finish. Deliver the **SciGirls® Challenge**: Create a game that meets the client's requirements.²

4. Plan. Have each group choose one mechanic for their game. The groups must come up with these four elements:

- a. **Theme** Make sure it will appeal to first and second graders. Encourage creativity!
- b. **Goal** A goal can be how the game ends, instead of how a player wins.
- c. **Game pieces** Remember not all games use game pieces—think of Tag!
- d. **Rules for the game** Have youth write clear instructions for playing the game.

POINTER: If youth are stuck on what kind of game to create, suggest they start with a game they know and alter it to fit their theme.



5. Create prototype and test. Create a prototype of the game using available materials.² This version should not be the final, refined game—it could be nothing more than pieces of paper. However, the prototype must include written directions so that another group can play. Each group should play its game before sharing it with others.

POINTER: Youth may struggle with sharing a creation that is incomplete. Remind them that prototypes are an important part of the design process, and even working scientists and engineers struggle when designing something new. Give youth positive feedback on their progress and processes, and point out unique features of their game.³



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6. Share. Each group should now play another group's game prototype. One youth from each group should stay with their game to hear feedback, take notes, and help the testing group if they are struggling. At the end of testing, have each group give feedback about the game they played. Is the game fun? Are the rules of the game clear? What did they like about the game? What didn't they like? Can they think of any ways to improve it?

Watch SciGirls experiment with user testing in **Game Changers** (Plan & Test).



7. Create prototype. Based on the feedback about the game, each group should refine their game by adding or removing different components, one at a time (mechanics, goal, game pieces, etc.). Groups should test their game after each change. Have the youth add a title to the game and make sure the rules are clearly written out for anyone to pick up and play. (If there's time, groups can test their directions by watching a new group play without help.)

8. Playtime! Set up a time for everyone to go around and play as many games as possible. Invite families! Celebrate each group's success and allow time for groups to share their process and struggles.³

Challenge Stereotypes

Introduce youth to diverse role models to help counter stereotypes.^{4,6} Laura Beukema is an interactive game designer who has created award-winning games for PBS Kids. Laura has led every stage of the game design process from art direction to content development to project management. She also designs websites and creates and manages Web content. In her free time, Laura is an avid arts and crafts maker and enjoys playing games of all kinds.



SciGirls Got Game!

SciGirls staff developed games for youth. Check them out with your group at pbskids.org/scigirls/games

Code Quest

Take Subbie the Submarine on an underwater coding adventure!

Dream Team

Play this cooperative game to learn more about working together to change the world!

Aquabots

Learn about buoyancy by designing an underwater ROV to help retrieve the ring from the water in this online game.

Creature Features

Use tools like binoculars and a microphone to help find the animals Izzie needs for her film in this game.