LESSON 6

Galaxy Ghosts

60 minutes | Advanced Game Development

WHAT THIS LESSON DOES

Get ready to build an exciting space-themed game using MakeCode Arcade! You'll create a player sprite, control its movements, generate enemy sprites, and program interactions to score points. Start crafting your galactic adventure now!

WHAT STUDENTS SHOULD BE ABLE TO DO

- Develop skills in using MakeCode Arcade to create a space-themed game.
- Learn to create and control player and enemy sprites, and program interactions between them.
- Understand how to implement a scoring system and a health bar in the game.
- Gain knowledge on how to increase game difficulty by increasing enemy speed over time.
- Develop problem-solving skills by modifying and improving the game.

BEFORE THE LESSON

- Open arcade.makecode.com yourself first and confirm your school filter allows it and the simulator loads with sound.
- One device per pupil, charged and logged in, so each pupil builds their own project.
- Project the site on the board so you can demonstrate creating a sprite and snapping blocks before pupils start.
- Have your own finished game ready to show what they are building towards.

Galaxy Ghosts

HOW THE LESSON RUNS

- Introduction to Galaxy Ghosts
- Start a New Project
- Create your player
- Move left and right
- Create the targets
- Random position at the top
- Create a speed variable
- Fire!
- Hit the target
- Add the 'status bar' extension
- Take damage
- Game over
- Wrap Up

TEACHING MOVES

- 1. Introduction to Galaxy Ghosts. Show your finished game briefly so pupils see the target: a ship that fires, ghosts that fall, a score and a health bar.
- 2. Start a New Project. Walk pupils through creating and naming a new project so nobody is stranded on the home screen. Check everyone has a blank workspace before moving on.
- 3. Create your player. Demonstrate picking the blue ship from the sprite editor rather than typing the image dots. Point out that create makes the sprite appear in the simulator.
- 4. Move left and right. Have pupils test with the arrow keys straight away. If the ship does not move, the controller block or the sprite variable is usually the culprit.
- 5. Create the targets. Explain onUpdateInterval runs every 1000 milliseconds, so one ghost spawns each second. Let pupils choose their own enemy sprite from the gallery.
- 6. Random position at the top. Show that a random x with a fixed top y is what scatters the ghosts across the top edge. Test that they now appear in different places.
- 7. Create a speed variable. Model creating the speed variable before using it. Explain vy pushes the ghosts downward and auto-destroy stops off-screen sprites clogging memory.
- 8. Fire! Point out that createProjectileFromSprite launches from the ship. Have pupils press A and confirm a projectile shoots upward before continuing.
- 9. Hit the target. Stress the two settings pupils miss: kind Projectile and kind Enemy in the overlap, and otherSprite (not mySprite) in the destroy block. Test a hit scores a point.
- 10. Add the 'status bar' extension. Show where extensions live so pupils can add Status Bar themselves. This is a common sticking point; circulate and check the new blocks appear.
- 11. Take damage. Point out the overlap here is Enemy and Player, and it uses sprite not mySprite. Have pupils crash a ghost into the ship and watch health drop by 10.
- 12. Game over. Have pupils test the losing condition properly by taking ten hits so they see Game Over trigger. A game that cannot end feels unfinished.
- 13. Wrap Up. Give pupils time to play and beat their own score. Invite one or two to name one thing they would change to make it harder or better.

WHAT TO WATCH FOR

- Pupils leave mySprite in the destroy block instead of using otherSprite or sprite, so the wrong sprite is destroyed or nothing happens. When a hit does nothing or destroys the ship, check the overlap block first. Have the pupil read aloud which sprite each block refers to.
- Pupils think the overlap works no matter what kinds are selected, and skip setting Projectile and Enemy correctly. Show that the two kind dropdowns decide which collisions count. Have them match the block to the sprite they are actually testing.
- Pupils expect a mistyped or half-snapped block to still work because they know what they meant. Remind them the simulator only runs exactly what is snapped in. Rebuild the block together and test one small change at a time.

DIFFERENTIATION

- Emerging: Pair with a partner who is a step ahead and have them build the same block side by side. Sit with them for steps 2 and 3 so they get the project open and the ship on screen, then release them.