



Lesson Plan For 3-4 Hours or Class Days

Description:

GaleForce is a virtual robotics and coding game where students (grades 3-10) are asked to join the GaleForce Robotics Disaster Relief Team to help San Juan, Puerto Rico to prepare and recover from a hurricane. Students work with a fleet of virtual robots and drones in remote-controlled or block-based coding missions such as evacuation, delivery of supplies, clearing debris from roads, or rescuing lost pets.

Massachusetts DLCS Standards Met: ([detail for standards met](#))

- MA DLCS Computing Devices [grades 3-5.CS.a]
- MA DLCS Algorithms [grades 3-5.CT.b]
- MA DLCS Programming and Development [grades 3-5.CT.d]
- MA DLCS Computing Devices [grades 6-8.CS.a.4]
- MA DLCS Algorithms [grades 6-8.CT.b]

CSTA Standards Met: ([detail for standards met](#))

- CSTA 1B-AP-08, 10, 11, 12, 13, 15, 16 (grades 3-5)
- CSTA 2-AP-13, 15 (grades 6-8)
- CSTA 3A-AP-13, 22 (grades 9-10)

Materials:

- Windows or Mac computers where you can install the GaleForce game from <https://galeforcegame.com/> ([directions](#)). The game will not run on Chromebooks or tablets. Two students can share one computer using pair programming.
- Access to the internet, security and firewall permissions, and youtube for the GaleForce videos
- Setting up your game session on <https://dashboard.galeforcegame.com/>
- Projector to show the GaleForce videos on the dashboard.

Learning Activities (3 Class Days or Hours):

Preparation:

1. Download and install the game on classroom computers from <https://galeforcegame.com/download/> ([Installation instructions](#)).
2. Login to <https://dashboard.galeforcegame.com/> with a Google Account.
3. Create a new session or select a previous session id and copy the session id to give it to your class.
4. You can show the videos and set the stages in the game in this dashboard. We recommend watching the videos in your browser using the open in new tab button in the dashboard and projecting your computer screen for your class.

Day/Hour 1 (60 mins):

1. Intro to the GaleForce narrative (10-20 mins)

- a. Room screen projector: Watch the intro video on [http://galeforcegame.com/youtube video](http://galeforcegame.com/youtube-video)).
- b. Watch the [Hurricane Katrina Video](#) (6 mins) to introduce you to the game's story and characters. Possible discussion questions:
 - i. Did anyone notice what Dr. Jackson's job was? Emergency Manager
 - ii. With the storm coming, what do you think Dr. Jackson is concerned about?
 - iii. What do you think people would want to bring with them if they had to evacuate their homes during a hurricane?
 - iv. What supplies do you think they need at an evacuation center like the Superdome during Hurricane Katrina?
- c. Optional: [Co-robotics slides](#) (an extra 10 mins)
- d. Watch the [GaleForce Now Narrative Video](#) (2 mins)

2. Intro to the GaleForce game (10 minutes):

- a. Give your class the Session ID you have created in <https://dashboard.galeforcegame.com/>
- b. Have them start the game and create their avatars (do not have them use real names because the game does save their names and code samples). Click on the "how to play" button. Type in the session ID. They can quit the game with CTRL-q or CMD-q.
- c. Enter the game and get used to moving in the Training Complex (CTRL-Q to quit the game. CTRL-ALT-DEL, Task Manager, to switch screens).
- d. Optional [Scavenger Hunt](#) (you can switch to the Scavenger Hunt stage which has no missions)

3. Training Complex Driving Missions

- a. **Debris missions (10 mins):**

- i. Switch Stage to Debris in <https://dashboard.galeforcegame.com/>
- ii. Optional: Show [Debris Slides](#) (includes hurricane vocab [video](#) and T1 demo video below)
- iii. [Demo T1 or show video](#) (With a class, it's better to watch the videos together in class, rather than in the game)
- iv. Explain: We need to clear the roads so that we can send out the robots to help people. Each team should go to the correct team table (look up to see team numbers above the tables). Students in each team should choose a letter a-d and do the 1a-d and 2a-d missions for their letter individually in their teams. The debris glows until you push it off the road.
- v. Do Missions 1a-d, 2a-d. Click on the steering wheel, then arrows.

b. Learn to drive mission (15 mins):

- i. Switch Stage to Learn to Drive
- ii. [Coding Slides](#) (optional, includes T4 video below)
- iii. Demo T4 on room screen to introduce the blocks: drive forward, turn, follow curb ([T4 video](#))
- iv. Divide into teams of 4 people per team and go to the correct tables (look up to see the team numbers above the tables). Do 1 mission in pairs: 4a, 4b, 5a, 5b, 6a, 6b (5 mins, [Solutions](#)). Pair 1 in each team will do the **a** missions on the right side of the map. Pair 2 in each team will do the **b** missions on the left side of the map.
- v. See who did which mission here:
<https://galeforce.netlify.app/blocks/monitor.html>

c. Optional Computer Vision and Follow Curb Missions (extra 10-30 mins):

- i. Machine Learning and Computer Vision [Slides](#) and [Activity](#)
- ii. Do Follow Curb Stage and missions
- iii. Optional [Kahoot](#)

Day/Hour 2 (60 mins): Drones

4. Training Complex Drone Missions (30 mins):

a. Drone Deliveries (30 mins)

- i. [Drones Intro slides](#) with [Drone Delivery video](#) (1 mins) and T11 video below.
- ii. Switch stages to **Remote Drones** and fly virtual drones individually in 10a-d (10 mins) ([Remote Drone Controls](#))
- iii. Switch stages to **Drone Delivery**.
- iv. Demo in mission T11 ([T11 video](#), 5 mins).
- v. Do drone mission in pairs: 11ab-13ab

- vi. See who did which mission here:
<https://galeforce.netlify.app/blocks/monitor.html>
 - b. **Drones and Loops (30 mins):**
 - i. Switch to the **Drone Loops** stage
 - ii. Drones and Loops [slides](#) and [video of slides and demo in T15](#) (7 mins)
 - iii. Do 15ab 16ab in pairs (Tell students to not do 17ab unless you have time for the spiraling square below).
 - iv. Optional Spiraling Square (extra 10 mins): [slides](#), missions 17ab in pairs
 - c. (Optional) Flying real drones ([slides](#), extra 30-60 mins)
5. **Graduation from Training:** Optional Dance Party. Take a screenshot photo when everyone is on the stage.
6. Optional Control Room **Preparation** stage - evacuate people before the hurricane

Days/Hours 3-4:

7. Hurricane Response (1-2 hours)

- a. Optional [Hurricane Naming Activity](#)
- b. Optional Control Room Preparation Stage in game (15-30 mins additional time needed)
- c. [Hurricane lands video](#)
- d. Split into 4 teams and go to the control rooms for each team
- e. Switch to the Response 1 Debris Stage and have students clear the debris (15 mins). You can skip A1 and A2 missions which map the debris using a spiraling loop if you have not done that in step
- f. Response 2 Delivery (30 mins, switch to stage Response 2)
 - i. Missions: transport to hospital, lost pets (**work in pairs** on 10 missions per team, [Solutions](#))
 - ii. "There are calls coming in from all over town needing help after the hurricane. Work in pairs on 10 missions sending out the robot and drones to help."
 - iii. See who did which mission here:
<https://galeforce.netlify.app/blocks/monitor.html>
- g. Optional Response 3 Missions (15-30 mins additional time needed)

8. Ending (5 mins)

- a. Ending [video](#)
- b. In the dashboard, change to the Ending Stage and turn on Unlock Map so that students can find the hidden door to walk around the map. Have students walk through the Puerto Rico map at the end of the hall - a secret door to the map

- c. Walk out to the map for dance party, hide and seek, or [scavenger hunt](#)
- d. CTRL-q quits the game!