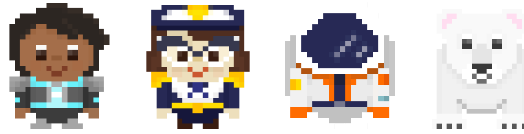


Lesson Overview for MakeQuest - An educational game to learn JavaScript



Welcome to MakeQuest - a coding game where players use the JavaScript programming language to change the layout of the game and the behavior of its characters. Players unlock JavaScript knowledge as they progress, and apply that knowledge to create their own original game experiences, then learn to publish and share their CS creations.

Total Time: 45-60 minutes

1. Getting Started (~3 minutes)
2. Activity (40-45 minutes)
3. Wrap-Up (~5 minutes)
4. Subject-Area Extension Activities

Technology: MakeQuest requires **no** downloads and **no** sign-ins to complete, and can run on Internet-connected computers, including Chromebooks, laptops, and desktops. A keyboard for typing code is needed, so mobile phones and tablets are not recommended for this activity. Browsers tested to support this game: Chrome 43+, Firefox 40+, Safari 8+, Opera, IE 9+.

Activity Overview: “Evil 404” has corrupted the World-of-Code. Your students’ job is to save the World-of-Code, as they learn about coordinates, variables and functions, and master some JavaScript programming skills. Students apply their new knowledge to build a Quest platformer game. Make their game hero jump high and far as they strive to reach creative goals and restore their very own World-of-Code.

Implementation Models: In-Class and/or After-School, including Flipped models

Recommended Grade Levels: 4-12

Recommended Computer Science Background Knowledge: None required

Course Description: This Globaloria Learning Game is designed to engage students in STEM learning through computing and game design. It provides an introduction to computer science concepts and the JavaScript programming language through a game-based, narrative-driven, ‘open sandbox’ courseware. New coders can go step-by-step through kid-friendly tutorials that introduce computing concepts including coordinates, variables, functions and more. Students with some coding experience can jump straight into the sandbox, and experiment and challenge themselves (and their parents and friends) to a game-level of their own making.

Objectives for Hour-Long Session: By participating in this hour-long learning activity, students will be introduced to coding and computer science in a fun, engaging way through game design. As a result, they will be able to:

- Demonstrate basic knowledge of JavaScript, one of the most widely used computer programming languages in the world, by writing simple code for a platform game.
- Describe fundamental computer science, engineering, and mathematics concepts and terminology, including variables, functions, numbers, strings, velocity, direction, comments, debugging, the coordinate plane, and x and y positions

MakeQuest: Model Lesson Plan



1. Warm-Up Discussion: (3 minute prep-discussion)

Launch your Globaloria MakeQuest activity by getting students excited. Discuss with them how computer science is part of every area of our lives and a great pathway for 21st-century careers. Discuss ways technology impacts our lives, with examples both boys and girls will care about (saving lives, helping people, connecting people), and highlight that it's important to learn how technology works, regardless of what career students want to go into.

Tell students that they will have the opportunity to experience what it is like to be a video game programmer, and solve a coding problem while learning to code at the same time.

2. Hands-On MakeQuest Activity: (45 minutes)

- Students type code.globaloria.com into their browsers (or better: pre-load beforehand)
- Students play and learn at their own pace
- Circulate around the room and encourage students to:
 - keep trying even if they get stuck
 - click the “*show hint*” buttons on every level of the course to help point students in the right direction if they need support
 - use problem-solving strategies, including asking others for help
 - celebrate when they beat another level (high-fives encouraged)

3. Wrap-Up: (5 minutes)

- Ask students to **save** their game by clicking the **Publish** button, so they can share their masterpiece. This generates a unique URL for each student.
- Create a simple gallery to share links with parents and other members of the community
- Encourage students to play MakeQuest again on their own at home or in the library, save their games and share them with the world.
- Encourage your students to check out their classmates’ games by doing “seat-swap”.
- Have students complete a quick essay/blog with their reflections on what they’ve learned, and what the coding experience means for them.
- Encourage students to email their reflections to MakeQuest@Globaloria.com – **we will publish it in our Globaloria Gallery for Hour-of-Code.**

4. Recommended Subject-Matter Extension Activities



- **English Class:** MakeQuest is a character-driven, narrative-style game written by professional game developers. Invite your students to take the author’s seat by brainstorming and drafting a compelling narrative about a topic of their choice – a story of their very own that, ideally, could turn into a game one day. Have students work alone or in small groups to invent and write a description of their game idea. They should include a main ‘hero’ character, a setting, an opponent or problem to overcome, and other obstacles and achievements that would round out the story. They should also provide a ‘backstory’ that will help inspire the player and give them motivation to win the game. Have them take turns sharing their creations in small groups, with the whole class, or on your class blog. Encourage students to email their narratives and game reflections to MakeQuest@Globaloria.com – we will publish it in our *Globaloria Gallery for Hour-of-Code*.
- **Science Class:** The coding activities that included direction and velocity are directly related to physics. Many of the sciences are enhanced by computer programming. Explain to your students how the mechanics in the game are also useful mechanics for creating computer simulations of scientific processes. Compile a list through a class discussion of the game mechanics that exist (controlling speed, direction, gravity etc) and challenge the students to create a scene of something that could would be useful to have simulated in this manner. (examples: crime scenes or sporting events)
- **Math Class:** Computer science and mathematics go hand in hand. Here are two exemplary mathematical activities with MakeQuest. **(a) Discover the Math in Computing.** Have your students go through the activity, and write any part of the coding process that seemed like “doing math.” As a class you can compile a list, and have a class discussion or assign a writing assignment on “*Why being good at math might be helpful if you were a video game designer.*” (Examples of “math” in the game are: gravity of players, velocity of moving objects, coordinate plane movements and direction, dimensions, etc.). **(b) Graphing on the Coordinate Plane:** the MakeQuest game helps establish the fundamentals of plotting functions on a grid. It can be used to help students develop fluency with graphing and coordinates. As a warm up, review the elements of the coordinate plane. Then ask students to play the game independently or in pairs. As a follow up, reflect on the experience in a class or partner discussion. What were some challenges of selecting the x and y positions of the platforms in the game? Invite students to share techniques and solutions they used with the class.

- **History Class:** Invite your students to research a topic for their *own* games. This is the perfect opportunity to introduce students to some of the amazing computer scientists (like Grace Hopper) and engineers who have made a tremendous impact on the world. Ask your students to research a character from CS history, that they would like to include in their own game level and include details such as: where the person is from, what skills or abilities made the person special, what obstacles did s/he overcome, what did s/he accomplish in his/her field to benefit the world, etc. You can even, time permitting, have students build paper-based games (called professionally – “Paper Prototypes”) so their classmates can learn—in a fun, hands-on way—about each student’s research findings.
- **Art Class (Music, Visual Arts, etc.):** The Arts play an important part in many computer programming fields, and especially in game design. Challenge your students to create their own musical scores and sound effects (in a program like GarageBand, etc.), or to create vector or bitmap artwork for their very own characters and game-level backgrounds. They can actually use some of these images in the sandbox (final level) of the game!

Facilitation Guide



BEFORE your session

- Skim this Globaloria MakeQuest Teacher Guide so you are familiar with what students will be working on, and have access to the solution code.
- Play the MakeQuest game yourself so you know what your students will be doing during the session
- Check your technology (laptops are charged, connected to wi-fi, etc.) and decide if you need to troubleshoot anything in advance.

AFTER your session: Tell the world what your students can do! Take pictures of your students at work, and their game screens. On Twitter, you can tweet pictures and screenshots of your students’ games, and use the handle @Globaloria and handle #MakeQuest to let others see and be inspired by your students’ success with coding. (Tweet Example: “My class completed @Globaloria #MakeQuest today! We designed & coded games! I’m a proud teacher). Then, consider planning another event that is longer and involves more students and potentially others in the community (parents, business professionals, etc.)



BEYOND One Hour: You and your students can use this one hour as the first step on an amazing journey into the world of computer science. At [Globaloria](https://www.globaloria.com), we work with teachers and students all over the country to teach computer science and STEM skills in fun and engaging ways through game-design courses using a variety of professional programming languages and design tools. Check out our website to learn more and view student-made, award-winning games that show the power of computer science and student imagination.

Consider using [MakeQuest](https://www.makequest.com) to let your students lead other students at your school during a lunch-and-learn session, a back-to-school night with parents, or in a variety of engaging ways to empower your students and spread computer science throughout your school community. Thank you!

We are here to help, every step of the way– The Globaloria Team. Do not hesitate to contact us with questions: info@globaloria.com

