Video Game Design

Developed by: *Jamaal Davis, adapted from a lesson plan created by multiple CLP staff*

Subjects: STEM
Estimated Time: 5 days, 2 hours per session
Grade Level: 6-8

About This Lesson Plan:

This five-session lesson plan uses a video game design tool called Bloxels to introduce middle school students to video game design. No coding or graphic design experience is necessary: students can use the app and this lesson plan to develop their own characters and levels to create their own playable final product. Video game design allows youth the chance to flex creative muscles and work as a team.

About Carnegie Library of Pittsburgh:

Carnegie Library of Pittsburgh (CLP), the public library system of Pittsburgh, Pennsylvania, supports educational attainment, economic development, and cultural enrichment in Pittsburgh. This lesson plan was developed by staff from The Labs @ CLP, Carnegie Library of Pittsburgh's learning lab. The Carnegie Library of Pittsburgh created The Labs @ CLP to offer teens with spaces for open exploration, peer-supported creativity, and mentor-facilitated learning. The library has developed programs that formalize and expand connected learning opportunities at new and existing Labs locations in CLP branches across the city.

Pro Tips:

This lesson plan is a good starting point for helping kids develop their skills as storytellers. Though the technology tools they'll use in this lesson plan may be novel, this lesson invites students to think deeply about developing characters, setting, plot, and narrative. Also, students are introduced to the idea of "modding" or modifying familiar games; ask students to think critically about the rules and strategies for their favorite games. Help them consider games from a new perspective, as an active game designer rather than a passive, reactive game player.

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Required Materials

- iPads
- [Bloxels Builder app](#) and [Bloxels Box Set](#)

Lesson Plan

Teacher Notes

- Days 1, 2 and 3 in this lesson plan can act as stand-alone activities, or it can be the first step in developing a playable video game.
- Students can individually develop a playable video game with Bloxels Builder app; however, this will take away from the team collaboration.

Day 1: Game Design Concepts

- Activity: Game Modding - Youth will redesign a familiar game, playing the traditional game as well as their modified version. This activity lays the groundwork for thinking about rules, game mechanics, and the flow/gameplay so they can enter the rest of the week's activities in context, having experienced what it's like to analyze and create rules for gaming.
  - Younger group:
    - Form teams for the week - think of team name and logo
    - Game Modding - Hopscotch!

Day 2: Character Design

- Activity: Initial Character Design - Youth will first brainstorm a character using paper grids and then recreate these characters with perler beads. The older group has the option of using PiskelApp.com or Sprite Something on iPads instead of perler beads to take an initial stab at designing game characters. If youth have trouble deciding they can use the Decide Now app to spin the wheel and choose either heroes or villains for their game.
  - Next move on to character design. There are two ways to proceed:
    - 8-Bit Characters w/ Perler Bead - Use paper grid templates to plan design of character then remake it with perler beads
    - Character Design w/ Bloxels app - Design an animated sprite for the game using the app.

Day 3: Level Design

- Activity: Level Design with Bloxels - Use Bloxels to build a videogame level. Bloxels are an innovative way of building a videogame in "real life" before uploading it to the Bloxels iPad app. Day 3's activity will focus on this process.
  - Younger group (7-9ish)
    - Use Bloxels to build a videogame level.
  - Older group (10-12ish)
    - Use Bloxels to build videogame level.
  - Extra Time?
    - Younger Group: Create theme music for games with Crayola DJ.
    - Older Group: Use GarageBand app on the iPads to create theme music for games. This activity depends on the number of available iPads.

Day 4: Complete Game Design with Bloxels

- Activity: Character Design (rest of game) with Bloxels - Youth will complete work with Bloxels app by completing design of characters, levels, and objects in their game and uploading via the iPad app.
  - Younger group (7-9ish)
    - Use Bloxels to finish game design.
  - Older group (10-12ish)
    - Use Bloxels to finish game design.
- Game controller design: Ideally, this could relate to the planning that the youth have already done. So, designing a controller that relates to their game idea. This day would involve an activity with Makey Makey to learn how it works. For example, youth could use Play-Doh to play Tetris. Youth plan their game controllers, if time allows.

Day 5: Game Testing and Tweaking

- Activity: Test, Tweak, and Offer Feedback on Games - Youth will prepare for testing and tweaking their team's game. They will also offer constructive feedback on other teams' games. With extra time they will experiment with MaKey MaKey -- thinking about the importance of the controller and what it offers to gameplay.
  - Younger group (7-9ish)
    - Finish game design, test, and offer feedback on their games in Bloxels.
  - Older group (10-12ish)
    - Finish game design, test, and offer feedback on their games in Bloxels.

Standards, Knowledge, Skills, and Understandings

- The learner goal is to use design thinking to create their own playable video game with the Bloxels Builder app and Bloxels Box Set.
- Learners will be able to determine what makes a well-designed video game; with an introduction to game design concepts, character design, level design, and evaluating and testing video game mechanics.

Essential Questions

- What makes a game fun?
- How can we use design thinking to innovate?
- How can we utilize feedback to improve a design?
- How do game designers use game mechanics?

Understandings

- Design thinking is a mental model that utilizes rapid prototyping with multiple iterations based around a wealth of user feedback.
- Effective design requires willingness to show users your unfinished work.
- Understanding that design thinking is a mental model that can be applied to everyday challenges.

Knowledge

Students will know:
- The components of designing a video game
- The process of design thinking
- The pros and cons of designing a video game with a team
- Effective ways to evaluate a video game based on established criteria

Skills

Students will be able to:
- Construct a multi-level video game on their own, without any programming experience
- Use design thinking
- Evaluate and test video games for balance
- Develop a rapid product prototype