1 Day Lesson Plan Summary

This 1 day lesson plan (1 60-minute class) will introduce students to the process of ***design thinking*** using the Bloxels Builder app and Bloxels Box Set. Design thinking is a user-centered (or better put, student-centered) approach for solving everyday problems made popular by the Stanford Design School. Bloxels allows students to experience the entire design thinking process in a short time period.

* For more information about design thinking in education visit: www.designthinkingforeducators.com

Teacher's Tip
This lesson is aligned to the Next Generation Science Standards (NGSS): MS-ETS1-1.

Learn more and watch a video of Bloxels in the classroom at bloxelsbuilder.com/education

Table of Contents

Time Recommendation
Next to each of the sections (and in the table of contents above) we have made time recommendations in order to finish the lesson in one 60-minute classroom period. We have found it very helpful to set timers as indicators the class must move on to the next step.

If you are running this lesson for the first time, you may consider breaking it up over 2 class periods to provide yourself with time between each section.

Lesson Objectives

By the end of the lesson, students will be able to...

- Explain the design thinking process.
- Describe the steps associated with design thinking.
- Apply design thinking to a challenge.
- Test a design and observe the user's interaction.
- Design a game in the Bloxels Builder app.

Materials to prepare...

- Devices with Bloxels Builder app installed
- The "Color Guide" from the Bloxels Guide Book for each student (see included PDF)
- Bloxels Brainstorming sheet for each student (see included PDF)
- Bloxels Gameboard: (one per student recommended, minimum one per group)
- Bloxels Blocks

Lesson Opening

2 Minutes

As students walk in, have the following questions displayed on the classroom board to answer.

1. What is your favorite game to play?
2. Why is this game your favorite?
3. What characteristics make this game fun?

Quickly (in **2 minutes**) discuss student responses to the questions. Emphasize that there are multiple characteristics that make a game "fun." (i.e. challenging, funny, etc.)

Note: Based on your students' familiarity with Bloxels it may be useful at this point to show them the tutorial videos.

Tutorial Videos
bloxelsbuilder.com/tutorials

Guidelines: Design thinking starts by gaining empathy for potential product users. To design an effective product we must put ourselves in the shoes of the users to identify the scope of the challenge.

Complete the Speed Design Challenge

Pass out the ***Bloxels 1 Day Speed Design Challenge*** handout (PDF included in this packet). Instruct students to open the Bloxels app and go to the Infinity Wall. Have students choose three games to play. Give students 4 minutes to play and evaluate the pros & cons of each game, for a **total of 12 minutes**.

Roam around the classroom and give feedback on the pros/cons students have noted.

Example Student Responses

PRO: "The enemies in this game made it really intense and exciting!"

CON: "The hazards were way overdone. It was too difficult to navigate the game, and practice didn't make it easier, just more frustrating"

Teacher's Tip
To have a wide variety of empathy building experiences, we've found it helpful to have students play sample games from the Bloxels *Infinity Wall.*

Guidelines: Design is most effective when it is aligned to a short and specific goal that guides the development of a solution. This goal may change throughout the process, but clearly defining an initial challenge will help focus brainstorming of potential solutions.

Define a Challenge

Give students **3 minutes** to reflect on the observations during the empathy step and define a challenge. Roam around the classroom and give feedback that pushes students to be specific with the challenges they define.

Example Student Response

"Based on my play testing I need a game that starts easy and gets more difficult as it goes on. There should be hidden items & coins that make players want to play the game again, even after they've beat it."

Guidelines: Ideation is the creative process of generating ideas. Having an initial collection of numerous, varying and unbounded solutions to the design challenge leads to innovative thought once constraints are in place.

Brainstorm

Give students **7 minutes** to brainstorm as many game obstacles as possible on the brainstorm worksheet (PDF included in this packet). We've found it helpful to set a goal for the number of obstacles.6 obstacles in 7 minutes should be reasonable. Roam the classroom and provide comments that encourage quantity over quality.

Note: To promote rapid ideation, and quantity over quality, we've found that using colors during this step is not necessary, and can take away from the focus on ideation. We recommend pencil or black marker.

Guidelines: Developing a rapid product prototype allows a designer to quickly get the product into the hands of a user for testing and feedback. Because a prototype is unfinished, the "cost" for changing course based on feedback is low.

Prototyping with Bloxels

Now that the students have received feedback on obstacles that align to the challenge they defined, the next step is to begin forming the ideas into a playable prototype.

Pass out the Bloxels Gameboard, Blocks, the "color guide" from the guidebook (see PDF in this packet). For the prototype, students will need to create games using the gameboard and blocks associated with the Bloxels Builder app. The purpose of the different color blocks is so that the app can recognize and translate them into a playable game. Color Guides will show students the meaning of each colored block.

Note: With a limited time window, it may be more effective to have students create directly in the app versus on the Bloxels board, but we are going to go forward in the lessons with building with blocks first. This decision depends on your classroom and how experienced they are with the app and how many devices you have for your classroom.

Getting Started with the App

1. Watch the Tutorial Videos
2. Open the Bloxels Builder app
3. Click "Quick Start", Go to "Games"
4. Build a Game Layout
5. Select the Camera button to capture a game

Tutorial Videos
bloxelsbuilder.com/tutorials

Building Your Game

Once you've created your first game layout, place the Bloxels gameboard on a white surface with good lighting. The app will recognize the Bloxels gameboard and capture the game. It's possible that in the translation process, some of the blocks will require slight fixes. These can be completed with the in-app game editor.

We've found it may be helpful to watch the tutorial videos in advance and demonstrate use of the game editor to the entire class.

- Show the use of the layout tools including the eraser and map.
- Show students how to use the configure tool to customize enemies, power ups, and story blocks.
- Show students how to add a new character to the game.
- Show students how to select music and name their game.
- Click the "Decorate" tab to show how to change the appearance of the level using assets from the library.
- Show students the use of the mid and far backgrounds.
- Explain that play testing is an important part of game design and now that one obstacle is drawn, we should test to see if it works. Click the "Play" button to show how to test the game.

Students will need time to capture, edit, and test their levels. We've found that **20 minutes** is typically enough time for a student to capture a Bloxels board into the App to make their own game.

Prototype (3 of 3)

Note: We've found that the shorter the tutorial the better. After an overview of the basics, students are able to pick up level design quite quickly, and assist each other. This may vary by classroom and their experience with technology and more specifically, game building software.

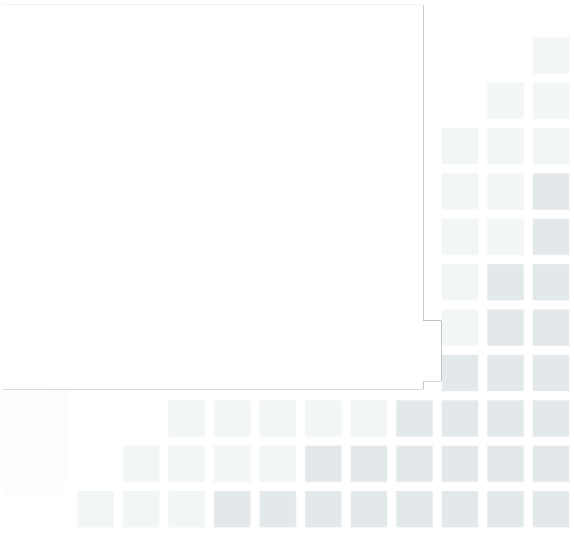
After demonstrating the in-app game editor and map functionality students should begin designing game prototypes. Roam around the classroom and encourage students to play test their obstacles regularly.

Based on the time you have in class, we've found that it is helpful to encourage students to work on a single board in their game, versus working on all multiple boards in a short time period. Most students are able to get a functional and fun game designed in 20 minutes.

Send Your Ideas to Us!

Some students will request for features to be available in the app. If you encounter a student who has ideas for new game features, please encourage them to make a feature suggestion for a future app update. As designers, we too continually improve our products based on user feedback.

Feedback on the Bloxels Builder app, including ideas/suggestions, can be e-mailed to: support@bloxelsbuilder.com



Guidelines: Effective design requires a willingness to show users unfinished work. Observing users interact with the product helps a designer see if the product is meeting its goal. In the software development industry, this practice is often referred to as 'beta testing'.

Play Testing

With about **10 minutes** remaining in class, encourage students to get their games to a playable, testable point. Most students will feel like their game is unfinished. They can be reminded that the game is just a prototype and getting feedback on unfinished work is an important part of the design process.

Have students partner up and playtest each game. Assign a partner A and partner B. First, partner A should playtest partner B's game, while partner B observes. Partner B should make notes about learnings and problem areas on the **Speed Design Challenge** handout. After playtesting, partner B should interview partner A for feedback on the game.

Then students will switch, partner B will playtest partner A's game.

Assessment Questions

What is Design Thinking?

How can it be used to make a product?

If you had 5 additional minutes during this process what would you spend it on and why?

A) gaining more empathy

B) re-defining your challenge

C) ideating

D) continuing to develop the prototype

E) observing a playtester

Example Student Responses

Selects A. It would be helpful to see other examples of what is out there before continuing to work on my game.

Selects C. If I had more obstacles brainstormed, I could piece them together to make my level more fun.

After play testing, encourage students to publish their games to the Bloxels Infinity Wall. Add #dt (design thinking) to the game name. We look forward to playing your class's games!

Share your classroom's work with us! We would love to see your creations.

- Facebook facebook.com/bloxelsbuilder
- Twitter twitter.com/bloxelsbuilder
- Instagram instagram.com/bloxels

Feedback

Feedback on the Bloxels app, including ideas/suggestions, can be e-mailed to: support@bloxelsbuilder.com

Additional Resources

For more Bloxels activities visit bloxelsbuilder.com/education

To get started download the Bloxels Builder app and purchase a Bloxels Box Set. Box sets are available to teachers in bulk packages for a discount here.

Powered By
Pixel Press™

Pixel Press Technology, LLC
1017 Olive St. Suite 800
Saint Louis, MO 63101

www.projectpixelpress.com