BLOXELS™
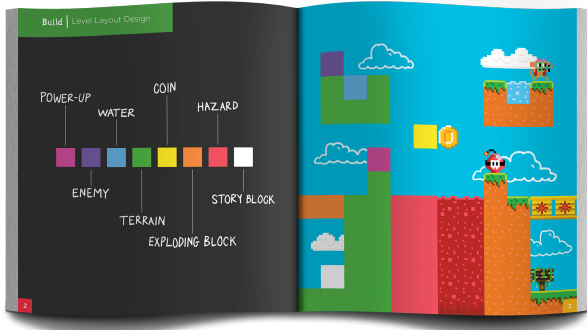
Welcome Educators!

Welcome to Bloxels, a hands-on platform for kids to experiment, build, and learn through video game creation.

Bloxels leverages student enthusiasm for video games to create an environment where learning is ***fun, interactive, and informative***. Bloxels employs the devices of an animated narrative – character, environment, and trials, combining them into a video game to design, code, play, share, and collaborate alongside peers. The platform makes it easy for *any* student to build 21st century skills in a high-tech environment.

Bloxels simplifies creating by breaking down the art to a simple 13-bit pixel game. First, the students will create, either with toy-based building on the Bloxels gameboard and then captured using the device camera, or with screen-based building directly in the app. Next, with content now created, adding interactivity to the assets, such as animations, movements and more is simple to get started.

Download the Guidebook
bloxelsbuilder.com/guidebook

With that, the power of Bloxels comes to life, and the hard work pays off. Not only can students see the authentic results of their own game, they can share their games with students around the world, experiencing the joy of others playing their game!
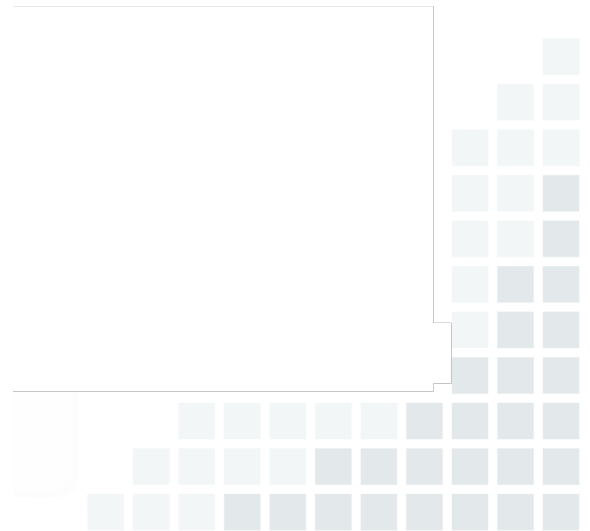
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Learn more at
explore.bloxelsbuilder.com

So, what's the deal with these blocks?

Bloxels is not just another tech-enabled toy. It's a hands-on, brains-on, creativity and technology experience.

By starting the game building process with the Bloxels gameboard and colored blocks, players are challenged to put down their screens and think strategically. Each block has many possibilities, so creating requires some imagination and calculation. Yet, it's as simple as building with blocks.

The on-screen experience combines design, logic and experimentation. It's about more than playing video games. It's about building a dynamic, interconnected world through the stories you're telling. It's about seeing your ideas in action, testing them and making them better. It's a little science and a lot of fun. And it provides an "online" experience without actually being online.

Grade Recommendation

Most activities are scalable in complexity, so it's appropriate for all grades, K through 12, but we've found grades 3 through 6 are best equipped to dive into the Bloxels experience and be challenged by it in an educational setting, however we've also seen Bloxels used to drive learning in areas such as computational thinking well into middle school.

However, Bloxels encourages collaboration, so players of all ages — parents, relatives, teachers, kids and their friends — can build and play games together. Bloxels can also be added to larger projects, providing an added layer of computational thinking and visual media literacy to almost anything!

21st Century Skills, STEAM, STEM, Maker, Common Core, TEKS, Design Thinking — Bloxels is unique in that it can be employed by all subjects, and makes using 21st century skills fun, while hitting all the standards that count along the way. Additionally, procuring Bloxels is an investment across the curriculum, enriching both the Humanities through culture and narrative, and STEM disciplines through technology and spatial reasoning.

Unlike other game building tools you've tried, with Bloxels students can make a game that can be built and played in minutes, rather than hours – but still has enough depth to keep them interested (and learning) for many more.

21st Century Skills

Through game design, Bloxels intentionally synthesizes and employs the skills needed for students to be active participants in the 21st century landscape. Through collaboration and critical decisions, students will benefit from having the equivalent of a next generation sandbox, a place to create, challenge, and innovate. These rich educational outcomes are the direct byproduct of giving kids a medium that is authentic and native to their experience at home and with friends.

The United States Dept. of Ed. and the Partnership for 21st Century Schools forecast that your students will inherit a world that champions the following skills:

- **Thinking critically and making judgements.**

- **Solving complex, multi-disciplinary, open-ended problems.**

- **Creativity and entrepreneurial thinking.**

- **Communicating and collaborating.**

- **Making innovative use of knowledge, information and opportunities.**

STEAM AND STEM

In 2009, President Obama launched the White House's *Educate to Innovate* initiative, creating over $700 Million in public-private partnerships. This was in response to forecasts that technology jobs will increase up to 22% by 2020. Whether STEAM or STEM, Bloxels offers an arena where students can hypothesize, deduce, iterate, and innovate. Put simply, students will design interactive, high-tech visual art (games) that can be shared with students from Sudan to Sweden, or Chile to China.

Bloxels provides students the tools necessary to demonstrate the Next Generation Science Standards inherent to any productive school environment. The possibilities are endless: How about an animation of Wave Properties? Or maybe a game that demonstrates the relationship between Matter, Forces, and Interaction? Bloxels provides teachers and students with endless possibilities for innovative exploration.

Design Thinking and Maker Movements

From Understanding and Developing to Prototyping and Publishing, Bloxels is a powerful tool to be used by teachers committed to highly experiential curriculum. If you have a commitment to a "show, don't tell" philosophy, you will find Bloxels to be a source of endless possibility. Bloxels is unique in that it provides hardware in the to form of blocks, and asks students to design interactive computer games, and finally can even lead into block-based coding, making Bloxels a natural fit into any Design Thinking or Maker curriculum.
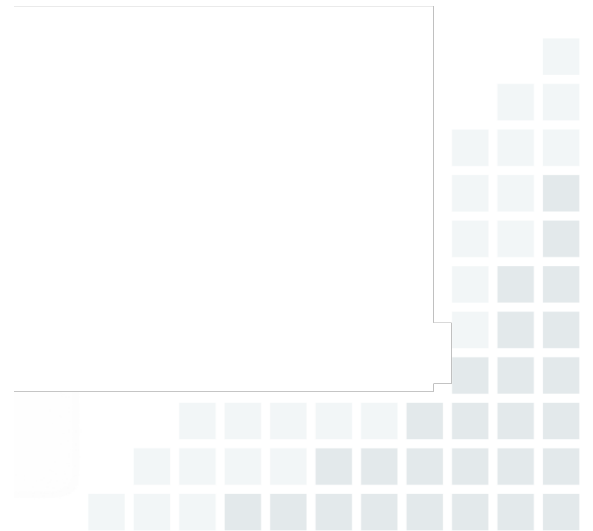
Standards

Bloxels is a flexible classroom tool that can be used with formative projects and summative project-based standards assessment. As a result, Bloxels works best when deployed into interdisciplinary environments, synthesizing several standards across the curriculum.

For more information:

Next Generation Science Standards *nextgenscience.org*

Common Core State Standards *corestandards.org*

International Society for Technology in Education (ISTE) Standards *iste.org/standards*

Learn more at
explore.bloxelsbuilder.com

Common Core Standards

Here are some of, but not all of, the standards that Bloxels teaches to (click titles for links to standards):

Common Core, English Language Arts (K-12)

CCSS.ELA-LITERACY.CCRA.R.7

Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

CCSS.ELA-LITERACY.CCRA.W.3

Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details and well-structured event sequences.

CCSS.ELA-LITERACY.CCRA.W.4

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-LITERACY.CCRA.W.5

Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

CCSS.ELA-LITERACY.CCRA.W.6

Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

CCSS.ELA-LITERACY.CCRA.W.9

Draw evidence from literary or informational texts to support analysis, reflection, and research.

Common Core, Mathematics (K-12)

CCSS.MATH.CONTENT.K.CC.B.4.A

When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.

CCSS.MATH.CONTENT.1.OA.B.3

Apply properties of operations as strategies to add and subtract. *2*
Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)

CCSS.MATH.CONTENT.4.OA.C.5

Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*

CCSS.MATH.CONTENT.7.G.A.2

Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

CCSS.MATH.CONTENT.7.RP.A.2.D

Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (O, O) and (1, r) where r is the unit rate.

Additional Standards

Next Generation Science Standard

MS ETS1-1: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

MS ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

ETS1.A: Defining Engineering Problems. Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.

TEKS

TEKS for Science, Standard 3 Scientific investigation and reasoning: The student uses critical thinking and scientific problem solving to make informed decisions.

TEKS for Technology Applications, Standard 1 Creativity and innovation: The student uses creative thinking and innovative processes to construct knowledge, generate new ideas, and create products.

Deploying Bloxels FAQ

Bloxels provides the perfect project-based curriculum through its thoughtful integration of several learning standards. Any teacher will want to take some time to walk through the world that will open when used in the classroom environment.

How many Gameboards do I need for my classroom?

We generally recommend one gameboard per student, although an extra gameboard will allow the student to build faster. Because the gameboard can be cleared and used over and over, even for the same game, the student will not be limited by having only one gameboard, and sharing a gameboard works as well.

Classroom 10, 15 and 20 packs and extra expansion packs available for purchase at a discount over buying single box sets.

How many devices do I need for my classroom?

Students working in groups should have a single device per group, this keeps them focused on building together as a group. A second device can be useful for testing games while being developed, but is not necessary.

Ideally, students would have their own Bloxels board and divide up into teams of three; each team would have three different student roles: character builder, layout builder, and decoration builder.

## Where do I get the APP for my device?

Click here for more details on downloading the FREE Bloxels Builder app and device compatibility.

You've opened the box! Now what? Here's what you need to get started:

Step 1: Unpack the Gameboard(s)

The 13x13 Gameboard provides the canvas for your students, a sandbox where their imaginations will unfold. Students will arrange the blocks within the boundaries of the board in order to create **Characters & decorations (using the blocks as art) and Layouts (where the blocks have specific meanings)**.
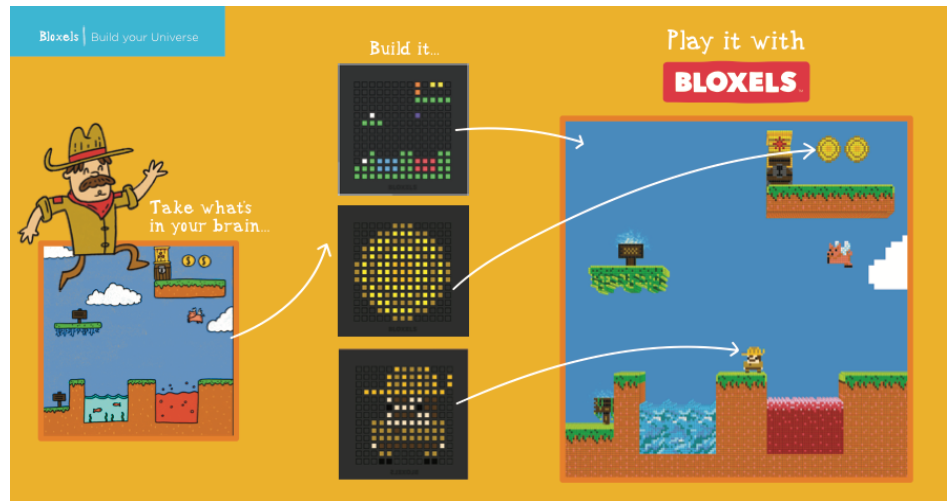
Step 2: Examine the Blocks

When building game layouts, each block has a specific meaning. There are eight different block colors. A color guide is available for each student in the 13-bit Builder Guidebook, which may have been included with your purchase or can be underlined printed for use in the classroom here.

Pink: Power-up

Purple: Enemy

Blue: Water

Green: Terrain

Yellow: Coin

Orange: Exploding Block

Red: Hazard

White: Story Block

Step 3: Install the **FREE** Bloxels Builder App

Visit the app store on your tablet or device and search "Bloxels" to download the latest version of Bloxels, or click here to for links and information on device support.

Step 4: QuickPlay & Familiarization

Want to dive in and see how the game plays? Hit **Quick Play** on the homepage page for the app. Pick a Character, Layout, and Decoration, and just play! You'll get a feel for the controls, and if you look close will start to understand how layouts and artwork combine to make a game from the 13x13 gameboards grid.

On this screen you can also test capturing game layouts (using the color guide on the previous page), or a game character (where the colors are used simply as art).

Step 5: Watch the Tutorial Videos

Bloxels has simplified the game build process to enable students to build games in minutes, where most game building software can take many hours if not days to have a playable game.

However, Bloxels still requires some practice to familiarize yourself with the creation interface – remember, this is a software development tool, not a game! Unless you want to figure it all out on your own, now is the time to watch our tutorial videos to familiarize yourself with the Bloxels Builder App, and don't be afraid to watch them with your students as well.

Watch all of the videos here to familiarize yourself with the game editor.

Step 6: Build Your First Game

Now that you have a better idea of how it works, click "Customize" from the quick start mode to start building in the full editor. You should set out to understand the 5 main areas of the builder, (1) Games, which use assets built in (2) Animations, (3) Backgrounds, (4) Characters and (5) Boards. Boards is essentially a library of assets that can be used pulled from to build in the other areas. You'll also notice in all of the areas that we've included pre-designed assets for you to use and edit to your liking.

Step 7: Design and Iterate!

Now that you've built your first game, take some time to try something interesting, such as making a component very challenging, unique, or even themed. This should help you start thinking of activities for the classroom, and you can find links to some of the activities we've created at the end of this document.

Step 8: Share and Play

Now that your game is ready to play, be sure to **share it** on the Bloxels "Infinity Wall." The Bloxels community all over the world will have the opportunity to play your game. You can also use the coordinate system to identify a blank area where your classroom can share it's content, for example check out -250, 700. If that area is still open, claim your spot by sharing a few tiles and get ready to start building because your students will be helping you fill up the tiles soon!

Assign each student to a Bloxels gameboard, ensuring that there is a device, or tablet, to be shared amongst each student, or when working in groups teams of 3 or 4.

Getting Started with Your Students & More Resources

Each classroom is unique, as is your technology setup and the number of Bloxels gameboards you have per student. While 1 tablet and 1 gameboard per student is ideal, we realize it's also unlikely. We generally recommend a setup of 3-4 students per tablet and no less than 2 gameboards per 4 students.

There are usually 4 assignments that can be spread out over a group of 3-4, split between a group of 2, or handled by a single student. The assignments include (1) layout designer (2) character designer (3) theme designer and (4) story designer (yes, you can add text!).

Consider these roles when planning your Bloxels experience, and tweak as your classroom grows and evolves with Bloxels!

More Resources

We have many more resources available to you on our website, check out our portal at explore.bloxelsbuilder.com for all of our latest content, or jump directly to any of the content listed below by clicking the link.

Bloxels 1-Day and 5-Day Lesson Plans

Tutorial Videos

13-bit Builder Guide Book

Bloxels Challenges & Activities

Bloxels Blog

Support

FAQ

Download & Device Support

We are available on Twitter at @BloxelsBuilder and Facebook.