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HOW TO CREATE FREE DIGITAL BREAKOUTS FOR LIBRARIES

Ellyssa Kroski

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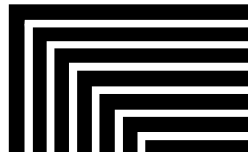
Library Technology

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Expert Guides to Library Systems and Services

How to Create Free Digital Breakouts for Libraries

Ellyssa Kroski



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How to Create Free Digital Breakouts for Libraries

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Abstract

Digital breakouts are immersive online experiences that pose exciting challenges for players and along with them opportunities for libraries to engage patrons while imparting learning outcomes and problem-solving skills. In this issue of *Library Technology Reports* (vol. 56, no. 3), "How to Create Free Digital Breakouts for Libraries," discover how libraries are using these tools to offer information literacy instruction, classroom support, youth programming, and even staff training and how you can create your own digital breakout adventures for your library today.

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What Is a Digital Breakout Game?

Digital breakouts are immersive online experiences not unlike their wildly popular counterparts, escape room games. These interactive diversions pose exciting challenges for players to overcome and along with them opportunities for libraries to impart learning outcomes and skill sets. Not bound to a physical location as are live escape games, these online adventures have the capacity to engross large numbers of students and library patrons by capturing their attention rather than their persons. Breakout games are being created by librarians and educators using a combination of free web-based tools and applications in order to simulate a series of locks to be opened, puzzles to be solved, and escapades to be carried out.

An Online Experience

Escape room games, rooted in entertainment genres such as adventure-style video games, immersive theater, and audience participation, utilize the principles of game theory to challenge groups of players to team together to solve a series of riddles and quests in order to solve the game or escape the room. These unique activities are much esteemed by libraries and corporations alike for their ability to promote teamwork and collaboration, as well as their ability to instill critical-thinking and problem-solving skills, all while engaging their participants.

Likewise, breakout games, the digital versions of these entertaining but useful pastimes, employ an online venue to achieve the same goals. Unlike live escape rooms, breakouts can be and most often are designed for individual players versus groups of participants. Breakouts are exceptional vehicles for presenting information literacy lessons that are cloaked in the appealing guise of a game and can be characterized by varying levels of difficulty and complexity.

Analysis of a Digital Breakout Game

Breakout games, much like escape rooms, can be set in a variety of fictional or real-life milieus, from space stations to libraries to prisons. They may employ a variety of themes, such as an impending zombie breakout, the American Revolution, or a scenario as mundane as missing the school bus. Many such digital games are focused on a book or a novel from which crucial clues to puzzles can be extracted. The possibilities are endless, and it is much easier to create fantastical settings and locales than in a live version of the game, particularly on a library's limited budget. Additionally, most successful digital breakouts are centered around one particular type of subject matter, skill set, or grade level and don't attempt to take on too much as these activities are meant to be completed in one sitting.

Main Components of a Breakout

Digital breakouts are comprised of simplified versions of the same elements that make up established escape room games. These are as follows:

- **The narrative** or backstory that sets the scene and the tone for the game. This bit of storytelling is what immerses the player in the event and informs the structure of gameplay by telling the participant what will be expected of them throughout the scenario. This is most often a short paragraph that sets the scene. However, it could also consist of an image, a series of images, or a video.
- **Locks** to be opened. Just as in a live escape room game, these digital versions have a series of locks that must be opened in order to complete the game. These locks can range in variety from simple number locks consisting of any number of digits to color locks that can be entered by using their hue's initial, such as RYGBOP, to directional locks

that can be entered similarly according to a route followed such as up, down, left, right (UDLR), or to alphabet or word locks. Instead of opening a lockbox, treasure chest, briefcase, or other physical container, these locks invariably reside within a single lock form listing all the locks to be solved in any order to win the breakout.

- **Puzzles** and challenges to be solved, and along with them clues left for the player. These puzzles can run the gamut from actual jigsaw puzzles that must be assembled in order to reveal a clue to word games and riddles, to image-based puzzles, quizzes, memory games, or task-oriented quests such as research-based challenges. The assortment of puzzles and riddles in a breakout add not only to the entertainment level of the game but also to the ability to impart lessons and set the scope and theme of the game.
- **A learning objective** to be met. While not all digital breakouts have a learning objective as their impetus, the vast majority do, as these online games and activities are used primarily by librarians and educators as teaching tools.
- **A resolution** to be found along with an accompanying reward. When players complete a conventional escape room game, they are rewarded by escaping the room and oftentimes given victory props such as signs saying “We escaped!” or “We Broke Out!” with which to pose for group photos. These victory rewards can be simulated by crafting a “Congratulations” note to victors that will be deployed upon the game’s successful completion, or digital badges can be created that will be accessible to those who are victorious.
- **A location** or setting for the game. In the case of a digital breakout, this is a virtual setting, yet still a necessary element. This is the “place” where all of the abovementioned components reside, including the lock form, the puzzles, the backstory with scene setting images, and so on, as well as the library or classroom branding. This virtual locale is most often a simple (and free) online website or document that serves to house the game.

Examples of Digital Breakouts

The very best way to familiarize yourself with all of the nuances of digital breakout games and the types of puzzles they typically employ, as well as the online tools most often used to build them, is to just start playing them. So jump right in!

Dracula’s Curse Breakout

Ellyssa Kroski
<https://sites.google.com/view/draculascurse>

I have created a simple digital breakout for a class that is reading the Bram Stoker classic *Dracula*. My breakout consists of four locks: three word locks and one number lock. To accompany the locks, I have created four puzzles, all of which are linked from within a large image of Bran Castle in Transylvania. On top of that image of Dracula’s castle, I created four circular portrait images of Vlad the Impaler and hyperlinked each one to a different puzzle, with each containing the clues necessary to solve the game: a jigsaw puzzle, a newspaper clipping, an acrostic word game, and a memory card matching game. While each challenge provides a clue, the player must have read the book or be familiar with the story in order to solve the game. In this way the breakout is entertaining yet still meets the learning objectives behind its creation.

Blackbeard Elementary School Supply Mystery

Erin Wilson
<https://sites.google.com/a/spotsylvania.k12.va.us/blackbeard-elementary-school-supply-mystery>

This excellent breakout incorporates both pirates and math as well as the need for critical-thinking skills. It consists of four different types of locks: a directional lock, a color lock, a word lock, and a number lock. All of the school supplies at Blackbeard Elementary School have vanished. In their place four locked pirate treasure chests have appeared. Can you unlock the chests and get the students their supplies back?

Og’s Great Adventure

Mari Venturino
<https://sites.google.com/site/digitalbreakoutjb/game-7>

In this clever breakout, players take on the persona of Og the Dinosaur for a fun adventure that puts them on the opposite side of the mountain from their friends. Og’s mom promises to take him to the other side of the mountain tomorrow if only the player can find her necklace. As Og, you remember seeing your little brother Goo place her necklace in a box and lock it, but since Goo can’t yet talk, you need to solve the puzzles to open it. This fun breakout game teaches players all about dinosaurs using a number lock and a word lock, as well as directional and color locks.

Game of Thrones Digital Breakout

Glenn Ferraris
<https://sites.google.com/sbstudents.org/gameofthronesdigitalbreakout>

Aimed at adults, this challenging breakout features a whopping six tough locks. Can you solve it? You are just about to watch the *Game of Thrones* finale when your cable goes out. Desperate to fix your cable

before the final episode, you must unlock the locks in order to get in and fix it before the show starts.

80s Movie Breakout

Glenn Ferraris

<https://sites.google.com/sbstudents.org/80smoviebreakout>

Five varied locks, including a date-format lock, guard this rad breakout aimed at adults. You are guaranteed to feel nostalgic playing this one if you grew up in the 80s.

Let's Play a Digital Breakout . . . or Five!

There's really no substitute for firsthand experience. The best way to learn the ins and outs of these is to start playing. So let's get going! Here are two great resources to visit in order to find ample digital breakout games:

Breakout EDU Digital Sandbox

<https://sites.google.com/site/digitalbreakoutjb/sandbox>

This massive listing organizes hundreds of free, community-created breakout games in subject areas ranging from history to music to library science and includes all grade levels from K–2 to adult. One of the most helpful features of this directory is the fact that it lists the email addresses of the breakout creators. So fear not! If you are stumped, you can always email the game designer to get the solution. I have done so myself.

The 50 States Digital Breakouts

<https://sites.google.com/tcea.org/digitalbreakouts/digital-breakouts>

This excellent collection of breakout games was created by educator Peggy Reimers, who is nearly done creating a custom breakout for each and every one of the fifty states. For an article about the process, see Peggy Reimers, "The 50 States Digital Breakout," *TechNotes* (blog), April 20, 2017, <https://blog.tcea.org/50-states-digital-breakout>.

Why Create Digital Breakouts?

Opportunities for Libraries

Libraries today are constantly transforming in alignment with advances in technology and adapting to new cultural inclinations to provide patrons with unique learning opportunities. Breakout games, just like live escape room adventures, offer plenty of prospects for libraries to inform, instruct, and enlighten library patrons while at the same time providing them with an engaging pastime.

These new breakout challenges can be used for library outreach to patrons of all ages as a fun way to learn about the library. They can also be used as a teaching tool to offer exciting information literacy instruction, classroom support, youth programming, and even staff training.

Information Literacy and Bibliographic Instruction

What better way to spice up a staid information literacy curriculum than with a tantalizing online game? Librarians can engineer puzzles that challenge library patrons to locate items in the catalog, explore online databases, practice identifying fake news, find peer-reviewed articles, learn how to cite sources, and so much more.

Because they reside entirely online and are most often devoted to a single player, these types of games are even better positioned for teaching valuable lessons in information literacy and use of the library than live escape games.

Curriculum Support

Digital breakouts are an excellent tool for providing

curriculum support and faculty partnerships. They can be designed explicitly for a single class or to support the subject-area curriculum within a university or school setting. Digital breakouts can serve as a vehicle for librarians to forge relationships with faculty and departments as they partner to create these effective games. As you will see in the following chapters, digital breakouts can quite easily be tailored for any subject area, and puzzles can be created using a variety of tools and applications for all levels of difficulty and subject depth.

Staff Training

In addition to providing fun and engaging learning opportunities for library patrons, digital breakout games are a fantastic means of conducting or supporting staff training. Rather than offering handouts at the end of a training presentation, why not challenge staff members to play a game? Or perhaps skip the presentation altogether in favor of designing a gamified learning instrument with a digital breakout. Retention levels of information are sure to be higher when presented with the incentive of fun and gameplay along with an interactive experience.

Critical Thinking and Problem-Solving Skills

Breakout games—just like their real-world equivalents, escape room games—offer a plethora of critical-thinking and problem-solving opportunities within their puzzles and game structure. Players must reason their way to victory in these single-player games,

making logical leaps, inferences, and deductions in order to complete the tasks at hand. Players try and fail, adjust their strategy, and try again. From these games they learn that failure is inevitable but it is a learning opportunity that also inevitably leads to success for those who endure.

Library Outreach

Portable by nature, these online games make an excellent outreach tool. They can be distributed to large numbers of people via the web for a free source of library marketing and outreach. Digital breakouts are an excellent mechanism to use to inform people about the library and its resources without spending any money out of the budget. Let players know about all of the great services and programs the library has going

on through engaging puzzles. Perhaps choose a theme such as an upcoming holiday that may reach prospective patrons who may not know about the library and its programming.

STEM Learning Opportunities

In addition to teaching about the library and its services, the games are great instruments for providing learning opportunities in the areas of science, technology, engineering, and mathematics (STEM). These inquiry-based learning games reside completely online and are perfectly positioned for teaching subjects such as computer coding and presenting challenges such as math puzzles while exciting players about winning the game.

Libraries with Digital Breakouts

Libraries have already started embracing this new technique of designing digital breakouts for creating educational content such as information literacy and bibliographic instruction lessons. These are but a few examples of the types of digital adventures that can be created with library patrons in mind. While the following are geared toward a school library audience, they demonstrate the challenges and learning outcomes that can be incorporated into these online games and can provide inspiration for their applicability to all types of libraries to engage patrons.

Book Fair Mixup

<https://sites.google.com/cfschools.org/book-fair-mixup-breakout/home>

Lisa Newgard

Elementary Teacher Librarian

Orchard Hill Elementary School

This excellent library breakout game designed by an elementary teacher librarian challenges students to save the library's books by solving five puzzles to unlock cases containing them before they are taken to the book fair by mistake. This fun breakout features five word and number locks. Chock-full of images displaying new releases and suggested reading, this type of breakout would make an excellent reader's advisory tool in all types of libraries.

Stop the Virus

<https://bthslib.weebly.com/stop-the-virus.html>

Joy Ferguson

Librarian

Brooklyn Tech HS Library

High school librarian Joy Ferguson designed a breakout game that challenged students with the quest "Can you stop the virus?" in this pandemic-themed hybrid breakout game. Students taking a library

orientation class were motivated to find books within the catalog, learn how to open the databases and filter search results, and get to know library resources to save civilization as we know it. This combination of a live event and an online breakout consisted of a flipped classroom model with a preview website activity, an in-person introduction, and three questions with the option to either find a book or continue to play three more questions. Teams of two sat together to take on the challenge. This type of digital breakout could work well for information literacy classes in academic libraries as well.

My Summer Vacation

<https://sites.google.com/cfschools.org/my-summer-vacation-breakout>

Lisa Newgard

Elementary Teacher Librarian

Orchard Hill Elementary

Designed to teach users how to use the library, this five-lock digital breakout challenges players to find out where Melvil Dewey has disappeared to after his summer vacation, solve all of the puzzles, and escape from the library. One particularly entertaining puzzle included in this breakout is a postcard that is written and encoded with Dewey Decimal classification call numbers! It is an excellent example of a breakout game that is designed to complement bibliographic instruction curriculum.

Let's Talk about Books

<https://sites.google.com/dcgschools.com/lets-talk-about-books/home>

Sandi Ellis

Teacher Librarian

Dallas Center—Grimes Middle School

This fun reader's advisory digital breakout was

designed to promote new and diverse books to students who think that they have already read everything “good” in the library. The breakout features four word and number locks, and the library collects email addresses of players to follow up with these patrons afterward. This style of an online breakout game could easily be adapted to all types of libraries in order help patrons discover the breadth of their resources and offerings.

Book Series Breakout

<https://sites.google.com/dcgschools.com/bookseriesbreakout/home>
Sandi Ellis
Teacher Librarian
Dallas Center—Grimes Middle School

This middle school library breakout was created to promote a book series as well as individual titles to students. Players adopt the persona of a student chosen to name the best books for readers of middle school age, but the list has gotten messed up. Students must find the contact information for Common Sense Media before an incomplete list is published with their name on it. Four locks guard their friend’s journal with the contact info. Clever clues such as video trailers promoting YA titles and Iowa Teen Award nominees, as well as a poster featuring YALSA’s Teens’ Top 10 list, make up the clues to this breakout’s solution. This type of breakout would be an excellent tool for academic libraries to develop in order to support bibliographic instruction for a particular class such as first-year English or for public libraries to promote a summer reading program.

How to Create a Digital Breakout

Getting Started

Now that you know what digital breakouts are and how they can be used by libraries as effective teaching, training, and outreach tools, you're ready to begin creating your own online breakout adventure!

Main Components of a Breakout

Once again, these are the main elements found in all digital breakouts, and we will be discussing how to achieve each of these in turn within this chapter and following chapters:

- the narrative
- locks
- puzzles and challenges
- a learning objective
- a final resolution
- a location

Think about Your Endgame

Why do you want to create a digital breakout? What do you want your students or library patrons to gain from it? Will this activity be designed purely for entertainment value to be used as an outreach tool, or will this be an instructional aid for an upcoming workshop you'll be giving? Will players ultimately learn something from your breakout, and if so, why and what elements are important to pass along? What will be your measure for success? Oftentimes it's easier to start at the end rather than the beginning, especially with game development.

Develop Your SLOs

While you are brainstorming your endgame and goals, make a bulleted list of your student (or patron) learning outcomes (SLOs). These will inform your background story, your puzzles, and your locks. It all begins here. What are your goals with this digital breakout? What would you like library patrons to learn? Will this be a breakout based on a particular course or summer reading list book, or will it teach how to develop library research skills?

For example, when I was designing my *Dracula's Curse* breakout, my goal was to immerse students in activities related to the book they were reading for class to get them excited about it. I also wanted to be certain that they read the book, so I wanted to make sure that some of the puzzles and their clues would be difficult to find answers for if students hadn't completed the book. I came up with the following learning outcomes for students who complete the *Dracula's Curse* breakout:

- Students will know that the year that Bram Stoker's *Dracula* was published was 1897.
- Students will know that a city that Dracula traveled to in the novel was London.
- Students will know that Dracula's nemesis was Professor Abraham Van Helsing.
- Students will know that the historical figure that Dracula is said to have been based on is Vlad the Impaler.

Your learning outcomes will define your narrative structure for the game, determine what types of locks you will employ, and help you choose appropriate puzzle types.

Let's Begin!

Creating a digital breakout from scratch involves a lot of moving parts. You will be creating quite a few files, forms, and images that you will want to keep organized. The easiest way to manage all of these files is to set up an online account in order to store them all in one place. For this digital breakout step-by-step walkthrough, we will be using the Google platform in order to create nearly all of our content. So it makes sense to store everything within a Google Drive.

1. Set Up a Google Drive

If you don't already have an account with Google, set up an account on Google Drive. Sign into your Google Drive account. Once you are in to your account space, add a new folder (+ New on top of the left-hand menu), and name it after your breakout. Click into your brand-new breakout folder. This space will now house all of the things that you create having to do with your game.

Google Drive
<https://drive.google.com>

2. Create the Narrative

Once within your breakout folder, click + New in the left-hand menu and select Google Docs. Name this new document BreakoutNotes. Copy and paste your endgame or goals for your breakout as well as the SLOs that you developed to the top of the page and start thinking about how you can transform those into an enticing backstory and a game scenario. For example, here is the backstory I developed for my *Dracula's Curse* breakout.

Mina Murray needs your help! While sleepwalking through the foggy countryside of England, she has somehow been transported into your classroom. Dracula is fast approaching, and you won't be able to hide her for long. Follow the clues left by Jonathan Harker in his journal in order to unlock each of Dracula's many coffins and destroy them to save Mina.

What is important with the narrative is that you create a theme and an experience for the player. Unlike the case of a traditional video game, you don't have the benefit of high-quality special effects, custom artwork, and a soundtrack to add ambiance, so think about what you can do to immerse the player in the breakout game.

Once you have written your backstory, you will

have a direction to go for the rest of your game. Set it aside for right now, and let's build the lock form.

3. Create the Locks

Just as with a conventional escape game, digital breakout games must have locks to open in order to solve the game. And just as in the live versions of these games, they can vary in type and difficulty. These can include

- number locks
- color locks
- alphabet or word locks
- directional locks

This is where the fun and creative part begins. Take another look at your SLOs, and see if you can pick out some elements to be the "keys" to open your locks. For example, with my breakout SLOs

- Students will know that the year that Bram Stoker's *Dracula* was published was 1897.
- Students will know that a city that Dracula traveled to in the novel was London.
- Students will know that Dracula's nemesis was Professor Abraham Van Helsing.
- Students will know that the historical figure that Dracula is said to have been based on is Vlad the Impaler.

I chose to extract the following elements to serve as my keys and locks:

- the year 1897—4-digit number lock
- the city London—6-letter word lock
- the name *VanHelsing*—10-letter word lock
- the word *impaler*—7-letter word lock

These four locks served as my lock kit for the breakout.

Create a Google Form

Digital lock kits are easily created using Google Forms. In your Google Drive breakout folder, go to + New in the left-hand menu and select More, and the menu will expand to allow you to choose Google Forms. We will now set up the locks.

The Google Form by default is a dual-tabbed form that houses Questions in one tab and Responses in another. The Responses tab supplies both summary and individual statistics about the responses entered into your form by participants. It is here that you will later be able to browse through all of the correct as well as incorrect answers that have been submitted. But for now we will concentrate on the Questions tab.

The Questions form begins with one untitled section and one untitled question. Click into “Untitled form” in the top center of the form and replace it with the “Titleofyourform Lock Form.” For example, mine is “Dracula’s Curse Lock Form.” You may add a description below the form title, but keep this brief, such as “Unlock the locks to solve the game.” See figure 4.1.

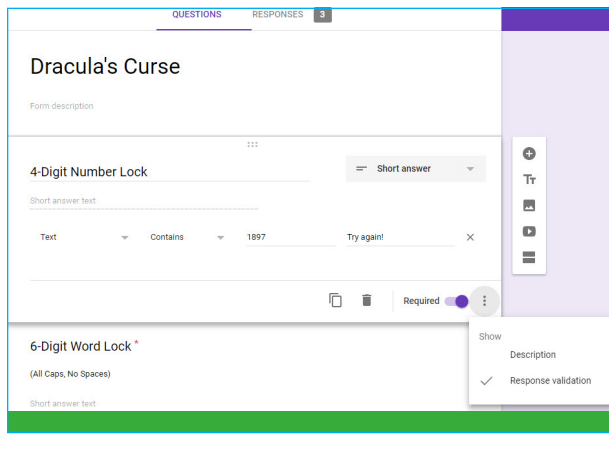


Figure 4.1
Setting up the lock form.

Set Up a Number or Word Lock

Now to the fun part . . . setting up the locks. Instead of questions on your Google Form, you will set up locks. Click on “Untitled Question,” and you will see this area expand. The first thing to do is to add a name for your lock, such as “4-Digit Number Lock.” To the right of each question is a drop-down menu with several choices of answer types for you to choose from. The default is set to multiple choice. You will want to change this to “Short answer,” which will allow the player to type in a single line answer to your question or lock.

Make Answers Required

Underneath the question, you have several options. You would click the icon that looks like a stack of papers if you’d like to duplicate this question. We will be doing this, but not until we’ve finished getting this lock completely set up. You may also delete this question if you decide that you have too many on your form. Next to the trash can, which allows you to delete your lock, you will see a slide on/off switch to make the question a Required answer. You will always want this in the On position. The default is Off, so go ahead and set this question to be Required. This will necessitate that players find the correct key to this lock before they can complete your breakout game.

To the right of the Required switch are three vertical dots. Click on them to make certain areas of your

question viewable and editable by you: the question Description and the form Response Validation. Click on each of these to make both of them visible. In the Description section, you have the opportunity to add brief instructions concerning the format with which players will enter their answers. For example, if you have a word lock you can include instructions such as “(All Caps, No Spaces)” so that players know how to enter their answers. This is especially important if you have multiple-word answers.

Tech Tip: While the form saves automatically as you make changes, Ctrl+Z will undo your last change if you realize you made a mistake.

Set Up Response Validation

When you clicked on “response validation,” you should have seen that the form expanded again, adding a new section. This is the area that will allow you to enter an exact or correct answer or response to your question.

You now have a myriad of choices of how you would like to set this up. On the first drop-down menu, you have the choice to receive your response in the form of a number or text. If you choose “Number,” the next drop-down menu will let you select to set this to be a number greater than a particular number, less than that number, a digit in between a series of numbers, and so on. Or you can choose “Equal to.” When you choose “Equal to” here, a blank line will appear for you to fill in with that number. Simply enter your answer number on that line to complete the sentence.

Alternatively, you could choose to receive your response as text for a number or a word. In this case, you would select “Text” in the first drop-down menu and “Contains” in the second. When you select “Text,” you will see a blank line appear; you enter your text answer here.

For example, the first lock on my lock form is a 4-digit number lock and I had the choice to set this up as

Text Contains 1897

or

Number Equal to 1897

Set Custom Error Text

The last line that you may fill out here is “Custom error text.” This will be the response that the player receives when they have entered an incorrect response and attempted to submit the form. For my locks I use the text “Try again!” as my custom error text, but you can adjust this as you see fit. It is important to note here that if you leave this blank, the form will give the correct answer to players when they submit the form

with text such as “Must be a number equal to 7.”

Tech Tip: You may preview your lock form at any point and enter answers by clicking on the eye icon on the top right of the interface. This will launch the form in another browser tab and allow you to interact with it.

Set Up Different Types of Locks

Now that you’ve gotten your question all set up, you’ve tested it out, and it’s working to your specifications, you will want to save yourself some work going forward by duplicating the lock. Click on the duplicate icon directly below the question to make a copy of it and create your next lock with all of your settings already applied.

Directional locks may be created by setting up word locks and specifying how answers are to be submitted in the Description section of the question, for example, “(U=Up, D=Down, L=Left, R=Right, All Caps, No Spaces, e.g., LLRUD).”

Similarly *color locks* can be set up by providing a description such as “(R=Red, Y=Yellow, G=Green, B=Blue, O=Orange, P=Purple, All Caps, No Spaces, e.g., PRGOB).”

You may even set up your own variety of locks such as those with symbols (*?/_\$%), letter and number combinations (13R5YP), compass directions (NWSWE), and so on. Get creative. The possibilities are up to you.

More Options

To the right of the question form, you may notice a floating menu that offers options to help you design your lock form according to your style and preference. You may choose to add new sections to your form if you have a large number of locks or if you’d like to separate your locks into different categories. You can also add a new title and description to your form in addition to the one at the top at any point within the form. This sidebar menu also gives you the option to import questions and add images and video to your form.

Form Settings

On the top right of the Google Form page, you will see a gear icon. Click it and you will see a three-tabbed Settings form. In the General section you have the option to collect the email addresses of those who play your breakout as well as a few other choices. The most important tab to pay attention to here is

the Presentation section. This is where you have the opportunity to enter a confirmation message to players. This is the Victory message that winners of your breakout will see when they have finally found all of the answers to all of your puzzles and unlocked your locks. You may choose to write a simple message to players such as “CONGRATULATIONS!! You solved Dracula’s Curse!” or a message with a link that leads to a digital badge that winners can display on their social media.

Sharing Settings

This is a rare instance in which you do not need to adjust the sharing settings for something that you create using a Google tool. Since we will be eventually embedding this form using a public link, this will automatically be visible to everyone, even if you’ve made your form private only to you. Sharing settings on Google Forms are changed only for purposes of adding collaborators to work on editing the form.

One thing that many forget to do when creating their digital breakouts is to change the privacy settings on their content creations to public. Google generates nearly every bit of content with a default setting of private, viewable only by the creator. If you don’t go in and change it on every document, sheet, website, drawing, quiz, and so on that you create for your breakout, you may have some frustrated players emailing you. But once again, for the lock form, you do not need to change or set any permissions or sharing settings.

Access Your Form

Google automatically saves new content as well as changes to content as it is edited. Since we navigated into our Breakout folder before creating this bit of content, it should reside there. Go back into your Google Drive and be sure that you can find your new breakout lock form. Set this aside for now, and we will return to it later on when it’s time to embed it into our public site.

And if you need additional help setting up your Google lock form, this is an excellent video on the topic: “Digital BreakoutEDU How To: ‘Locked’ Form,” posted April 18, 2016, by “A Ballsy Sense of Tumor,” YouTube video, 4:24, <https://www.youtube.com/watch?v=bAVT2xeVUQU&feature=youtu.be>.

The core of your digital breakout game is now complete. You have a clear direction developed, your learning outcomes are defined, and your lock form is built. Now you’re ready to craft some custom challenges for your players to overcome.

How to Create a Digital Breakout

Developing Puzzles

The next big step in creating a breakout is to create puzzles and challenges for players to solve, giving them much needed clues to open your locks. And this is when things become really fun as there are so many different kinds of puzzles that you can create online for free. Once you know what is possible, it will be easy for you to choose which ones are right for your breakout. Let's look at some of them.

Jigsaw Puzzles

Online jigsaw puzzles can be very entertaining for players to put together (as long as there aren't too many pieces!), and they are also a terrific way to hide a clue for one of your locks. They are used frequently in digital breakouts as they are quite simple to create. The website Jigsaw Planet will let you easily transform any image into a jigsaw puzzle with any number of pieces and in different shapes.

Jigsaw Planet
<https://www.jigsawplanet.com>

Think about what types of images might hold clues to your locks, such as photographs of authors, book cover images, old maps, and so on, as well as what types of images you can create yourself. Most likely there won't be an exact image that fits your breakout game, so you will need to create one yourself using a Google Drawing.

Create a Google Drawing

Navigate back into your Google Drive breakout folder, go to + New located on the left-hand menu, select More and the menu will expand to allow you to choose Google Drawings. We will now create a custom image.

Name or title your drawing file on the top left of the page. You will see that you are given a blank canvas to work with. Next you will want to search for an image or images that you can work with to create a jigsaw puzzle drawing.

I found the image for my jigsaw puzzle on Wikipedia, but you may also search for public domain images within Google's Advanced Image Search. There you can filter your search results by usage rights to just those images that are free to use or modify usage rights requirements using the very bottom drop-down menu.

Google Advanced Image Search
https://www.google.com/advanced_image_search

Once you have your image or group of images, return to your Google Drawing tab and choose the Insert menu in order to insert them on the page. Also via this Insert menu you can add text boxes with text clues that can be read only once the player assembles the puzzle. You can also insert shapes, word art, lines, and much more. The ability to insert tables, charts, and diagrams comes in handy for technical or training breakouts.

Once you have the image or images on your canvas, you can use the handles on them to resize and position them. You also have the choice to change the

background color of the canvas to match your image or images by right-clicking anywhere on the canvas itself and choosing Background.

For my jigsaw puzzle image (figure 5.1), I inserted an image of Vlad the Impaler into the center of my Google Drawing, changed the background color to black, and added a text box at the bottom containing my clue “Vlad the _____” in order to give players a clue to my 7-digit word lock.

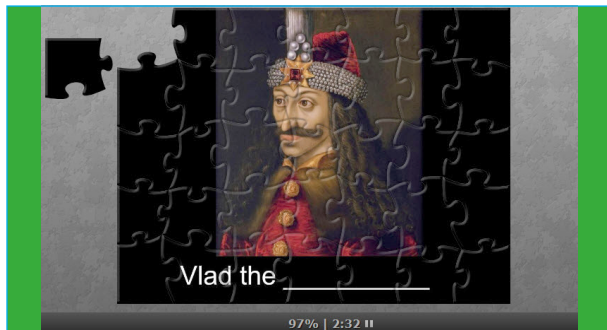


Figure 5.1. *Dracula’s Curse* jigsaw puzzle created at Jigsaw Planet

Once you’re satisfied with your image, you’ll need to download it so that you can use it in Jigsaw Planet. Do this by going to File, selecting Download and JPEG as the format. Save this file somewhere easily accessible on your computer.

Next you will want to go to Jigsaw Planet to finally create your puzzle. Navigate to Jigsaw Planet and click Create at the very top of the page. Select Choose File, find your image to upload to the site, and name your puzzle. You can then determine the level of difficulty that you want. The number of pieces will vary and grow depending on how much you raise the difficulty level. The important thing to keep in mind here is that this will be just one of many puzzles that players will need to solve, so you don’t need to make it super difficult in order to make your game challenging. You also don’t want to frustrate players. If you opt to make your puzzle extremely difficult with over a hundred pieces, this will make puzzle pieces very small, which will be particularly challenging for older adults who are starting at the screen while trying to solve your breakout, so keep your audience in mind as well. I chose to create my puzzle using the default (35 pieces) setting, which I think is challenging enough while still being fun. Don’t forget, these are games and are supposed to be fun!

Next you can choose what shape you want your puzzle pieces to be created in. I chose to stay with the default classic style pieces, but this is completely up to your preferences. Consider what will go best with your breakout theme. When you are done choosing your settings, click Create, and watch your jigsaw puzzle come to fruition.

You have now created a custom jigsaw puzzle. Try it out, but don’t forget to grab the link to your puzzle so that you will be able to share it with players in your breakout. You can copy and paste the URL in the address bar or click Share on the top right of the website and select Embed. The Embed page offers you several options for adding the jigsaw puzzle to a website. Be sure to paste the link to the jigsaw puzzle into your BreakoutNotes document.

Quizzes

Online quizzes can be an excellent puzzle type for research- or training-oriented breakouts, especially if you want to collect information about how much knowledge is being retained from a reading or a presentation. A straightforward quiz is easy to create using Google Forms in much the same way we set up the breakout’s lock form.

Going back into your Google Drive breakout folder, go to + New located on the left-hand menu, select More, and the menu will expand to allow you to choose Google Forms. You should be very familiar with the interface from the previous chapter’s lock form discussion and know that you can click on the gear icon at the top right to get further options. If you click on the Quizzes tab, you may opt to have Google make this a quiz. You can then create a quiz with a series of questions that the player will submit answers to via the form. However, this will not allow any interactivity aside from a final “thank you for taking this quiz”-type confirmation message and allowing the player to see the correct answers to each question once they submit their form. We want to set up something more like an interactive mini-game using Google Forms.

Rather than selecting to make this a quiz, we will keep ours as a plain old Google Form, start with a single question, and then add in some logic to make the magic happen. For our first question, we will keep the format of the answer as the default “Multiple choice” and add in our choices such as

What is Jonathan Harker’s profession in the novel?

- Librarian
- Solicitor
- Real Estate Agent
- Chef

We will stop there and think about what we want to happen when each of these choices is selected by the player. For example, the correct answer is Solicitor, so we want the player who chooses this answer to move forward to question 2, while everyone who chose one of the three wrong responses will go to a message instructing them to try again. In order to achieve this,

we need to create two new sections of our form: one for the next question and one for the “try again” message.

On the menu to the right of the form, select Add Section. This will create Section 2 of 2. Change the Untitled Section title to “Please Try Again!” and once you add the next section you will come right back here and you will be given a choice of where to send players after this one. But first, create another section, which will be 3 of 3. Name this “Question 2” (see figure 5.2). This is where you will eventually add your next question once we’re done editing the first one.

Go back up and change the “After section 2” choice which now appears below it to go back to section 1 as you want players to find the correct answer to the first question before moving forward.

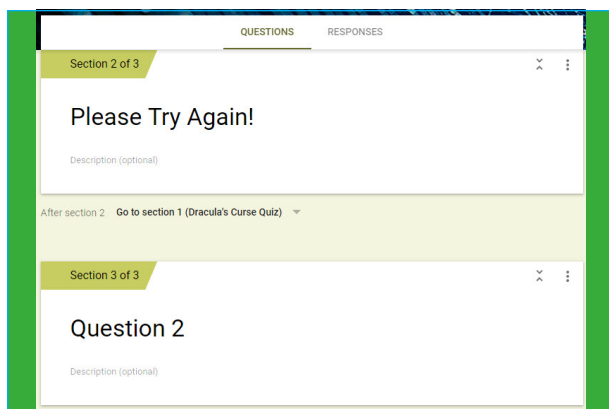


Figure 5.2. Sections of *Dracula’s Curse* quiz using Google Forms

Scroll back up to the first question, and let’s add some action to it. Click the question to edit it, and select to make the question Required. Then click on the three dots next to the Required slider, and select “Go to section based on answer.” Now you can define where each of the answers will bring players should they select it. Next to Solicitor, choose “Go to section 3 (Question 2)” from the drop-down. Next to all of the incorrect responses, change the drop-down choice to “Go to Section 2 (Please Try Again!)” (see figure 5.3). Try out your form at this point using the eye icon at the top of the page to see how all of this is working. You can also try out my form here to better illustrate the experience for the player: <https://forms.gle/59XPpuy9PXXodoxs5>.

Now that the first question is complete, it will be easiest to simply duplicate it in order to create the next one. Duplicated questions will appear directly below the original, so you will want to drag the question into the Section 3 Question 2 section by clicking on it and holding down the mouse button as you drag it. Once there, you have your template to set up the next question.

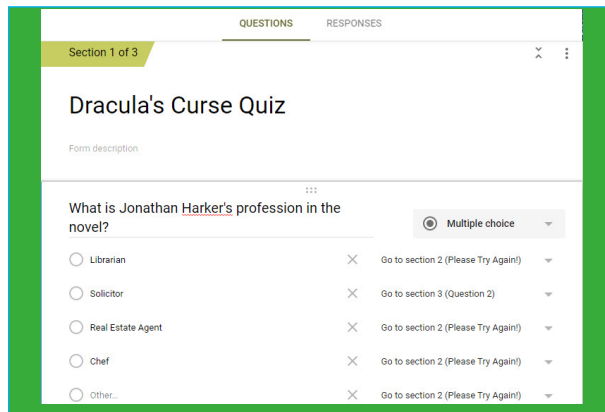


Figure 5.3. Assigning outcomes of quiz answers using Google Forms

You will now want to set up a new section underneath your second question titled Question 3 where you can send the correct responses to your new question. You may continue to lead incorrect responses to the already established Section 2 (Please Try Again!). Continue to create questions for your quiz game in this way until you come to your final question. While you are working on your final question set up a new section titled something like “Congratulations!” or “The End!” You can then place a clue in the description area to help players solve one of your locks. Here’s an example that I used in mine:

Congratulations!

Read about the deleted ending here: <https://en.wikipedia.org/wiki/Dracula> and fill in the blank . . . “the fragments that had been tossed skywards in the _____”

You’ve now created an interactive quiz with Google Forms for your breakout! In order to provide access to your quiz, you will need to grab the link.

At the top right of the form, click on the Send button. This will open the “Send form” dialog box, where you can select the link icon among the “Send via” choices. This will give you the link to your form to share and the option to shorten the URL. Copy and paste that link into your BreakoutNotes document and set it aside while you create the rest of your puzzles.

Spreadsheet Puzzles with Conditional Formatting

One interesting and easy way to create puzzles that will slowly reveal clues and lock combinations is to create a spreadsheet with conditional formatting. Using Google Sheets you can quickly set up a spreadsheet

with cells that will change their formatting depending on the answer that is entered. This is particularly useful to know about if you'd like to include a color lock in your digital breakout. You could create a puzzle spreadsheet populated with questions, the answers to which would reveal a series of colors to be entered into a lock.

To start, return to your Google Drive breakout folder, go to + New located on the left-hand menu, and select Google Sheets. This will launch a new spreadsheet. Go ahead and rename your "Untitled spreadsheet" after your breakout. On the spreadsheet, set up two columns named Questions and Answers and bold these so that they stand out. Now, enter your puzzle questions within the left-hand puzzle column you just created such as the ones shown in table 5.1.

In the Answers column, right-click on the first answer cell and select "Conditional formatting." A "Conditional format rules" interface opens to the right. This where you can set the cell to change color as answers are entered. You will want to keep this on the default "Single color" tab. The "Apply to range" should have populated with the answer cell since you right-clicked it. Within the "Format rules" area, there is a drop-down menu that will let you set the rule for when the cell is to be formatted and how. Pull open this menu and select to format cells if "Text contains" and enter the correct answer in the box. Last you will choose how the cell will be formatted by clicking on the paint can at the far right of the "Formatting style" menu and choosing a color. I would recommend choosing a bold color rather than a paler shade to be sure that players are able to properly identify it for the lock combination. I chose a bold blue for my first color. Select Done.

You can see now that the sheet has started a list of rules for this particular cell. If you anticipate that there may be variations entered for your answer, you may want to set up another rule to also turn the cell to your color choice if a correct variant is entered. Note that the formatting rule is not case-sensitive and will be applied whether the player uses caps or sentence case for their answer, so there is no need to set up a separate rule for that contingency.

Now that the behavior of the cell is established for the correct answer, we will be also be adding another rule dictating what happens if the player enters an incorrect answer. This way the player will know that the form is working and that they need to try again. This can be done in multiple ways; for instance, all of my answers will be yes or no responses, so I could simply create a rule that specifies that the cell should be somehow formatted if the text contains either yes or no depending on which is incorrect for that question. However, since many of these puzzles will contain other types of answers as well, we can instead specify that the format rule to make changes to the

Table 5.1. Setting up a Google Sheet puzzle with conditional formatting

Questions	Answers
Was Dracula's main rival Dr. Seward?	
Did Jonathan Harker survive his encounter with Dracula?	
Did Lucy Westenra become a vampire?	

Table 5.2. Providing a color key using Google Sheets conditional formatting

Questions	Answers
Was Dracula's main rival Dr. Seward?	yes
Did Jonathan Harker survive his encounter with Dracula?	yes
Did Lucy Westenra become a vampire?	yes

cell should apply if the cell is not empty, meaning the player has entered an answer and that answer was not the correct one and did not have the first rule applied to it. Since this is a color puzzle, we don't want to change the background of the cell to any particular color, but we can format the text to be crossed out by choosing the Strikethrough icon (fourth from the left in the "Formatting style" menu), thereby letting the player know that their answer is wrong (see table 5.2). Once those two rules are set up for your answer cell, test it out and be sure it's working correctly by entering both the correct answer and an incorrect one. Also test out any variations for which you created rules. When you've determined the cell is working well, you are ready to set up your next answer cell in the same manner.

Tech Tip: It is not recommended that you use Ctrl+C to copy and paste your first answer cell into all of the other answer cells for your sheet. It may be tempting to do so since it's already set up. However, doing this will change the rules to include the entire cell range and any answers that you modify will then apply to all of the answers rather than to a single cell.

After you have completed formatting all of your answer cells, don't forget to delete your test answers so that all cells are blank and you will be ready to share this with your players.

Sharing Your Spreadsheet Puzzle

You are now ready to share your color puzzle with your players. However, this becomes a little tricky. You don't want to actually share the original spreadsheet with everyone because then, once one person

fills it out, it will overwrite your puzzle and no one else will be able to play it. Instead you want to give everyone access to make a copy of the spreadsheet and play it as their own puzzle. In order to do this, all that you have to do is make a minor adjustment to the URL. You can grab the URL from the address bar in your browser, which will look something like this:

<https://docs.google.com/spreadsheets/d/12wOjDfwmNN4ZVZ30ZtxM84Ktoq2P9BBXLdfrpKqgq3A/edit?folder=1D5Q8PkTnJFbrvsZjHyD8QKMHqWjp9w4u#gid=0>

Alternatively you can click on the Share button on the top right of the page. Click on “Get sharable link,” and this will automatically copy a link to the clipboard such as this one:

<https://docs.google.com/spreadsheets/d/12wOjDfwmNN4ZVZ30ZtxM84Ktoq2P9BBXLdfrpKqgq3A/edit?usp=sharing>

In either case, all that you will need to do is erase the word *edit* and anything that follows it from within the URL and replace it with the word *copy* so that it looks like this:

<https://docs.google.com/spreadsheets/d/12wOjDfwmNN4ZVZ30ZtxM84Ktoq2P9BBXLdfrpKqgq3A/copy>

This will then become the link that you will use to share your puzzle. Once it’s clicked on by the player, they will be led to a page prompting them with a message such as this:

Copy document

Would you like to make a copy of Dracula’s Curse Spreadsheet Puzzle?

Players will follow this prompt to create their own copy of your spreadsheet puzzle to solve.

Word Games and Cyphers

Discovery Education has a terrific free puzzle-making website that will enable you to easily create custom word searches, double word puzzles, crosswords, math squares, cryptograms, and more. For one of my puzzles, I used the double puzzle tool to create an acoustic game that challenges players to unscramble a series of words from which certain letters are placed into a final cypher puzzle to achieve the combination to my 10-letter word lock. The puzzle maker creates an image of your final puzzle rather than an interactive page where

you might send players to fill in the puzzle. In order to share the puzzle once it’s complete, right-click on the puzzle image and save it as a JPG file. Navigate back to your Google Drive breakout folder, go to + New located on the left-hand menu, select More, and the menu will expand to allow you to choose Google Drawings. Rename your drawing after your breakout puzzle on the top left, choose Insert and Image from the main menu, and upload the puzzle from your computer. Be sure and click on the Share button on the top right and select “Get sharable link.” You can leave the setting at “Anyone with the link can view” and copy that link in order to be able to share it publicly. Set this aside as you create your other puzzles.

Discovery Education’s Puzzlemaker
<http://puzzlemaker.discoveryeducation.com>

Secret Message Maker

https://www.abcy.com/games/decoder_puzzle

The Secret Message Maker (figure 5.4) will encode a short message and provide a decoder key for players to use to solve your top-secret missive. You can print out or save your puzzle in order to share it. Follow the directions from the section above for how to save the puzzle to your computer and create a Google Drawing to share it.

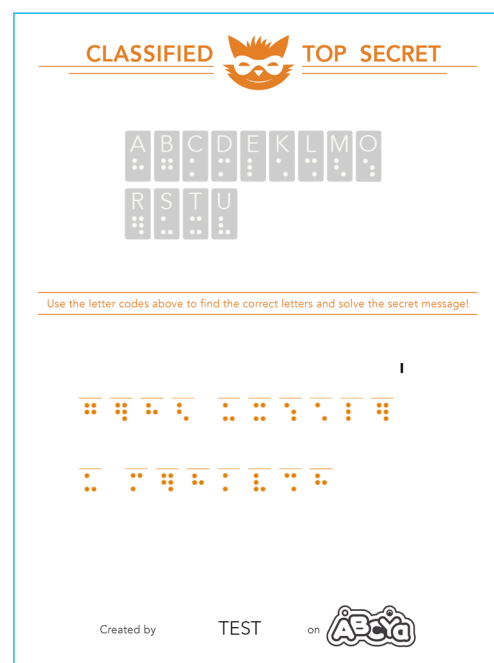


Figure 5.4. Secret Message Maker cypher

Snotes

<https://snotes.com>

A snote is a secret note that contains a message that must be read at a particular angle in order to be decipherable (figure 5.5). After taking a quick tutorial on the Snotes website, you will be able to create these beautiful hidden messages. Free users of the site can easily share their creations by emailing the snote to themselves and grabbing the link to it.



Figure 5.5. A Dracula-themed message using a Snote

Morse Code Translator

<https://morsecode.scphillips.com/translator.html>

The nifty Morse Code Translator app works in much the same way as Google Translate except it transforms your message into Morse code in the form of both text and sound outputs. You can even adjust the speed! Once you have created your message, you can download a WAV file to share with players.

Binary Conversion and Binary Translator

https://roubaixinteractive.com/PlayGround/Binary_Conversion/Binary_To_Text.asp

<https://www.binarytranslator.com>

Much like the aforementioned Morse Code Translator, the Binary Conversion and Binary Translator tools will take ordinary text and transform it to machine-readable zeroes and ones before your eyes. The resulting code can be copied and pasted in order to share within a breakout game.

Google Translate

<https://translate.google.com>

Don't forget about the ability to use Google Translate to translate words and phrases into foreign languages for digital breakouts, especially if languages are one of your themes.

Hidden Clues

There are many websites that will allow you to create exciting and imaginative clues for your players by hiding them within the text of a familiar item. Before selecting one of these types of clues to construct, think about what you can utilize that will further immerse them in your theme. For example, I used a newspaper generator tool to create a clipping of the *London Times* dated during Dracula's time period in order to hide a clue within it (figure 5.6). This made sense for my breakout's premise. Creating an imitation airplane ticket or a Starbucks receipt with Dracula's name on it would likely have pulled the player out of the atmosphere of my theme.



Figure 5.6. A hidden message within the text of a newspaper article

The Newspaper Clipping Generator

<https://www.fodey.com/generators/newspaper/snippet.asp>

This free application Newspaper Clipping Generator will lead you through creating your own newspaper clipping from any newspaper you can imagine complete with your own headline and story. I chose to create a clipping from the *London Times* in the year that Dracula was published. I then hid the words (YEAR) and (PUBLISHED) within the article's text, which I took straight out of the novel. I was then able to save the image and create a sharable Google Drawing according to the above instructions. Many breakout game creators use newspaper articles such as these in order to hide bolded bit.ly URL strings in the text. Players must find the URL and piece it together in order to be taken to a website with another clue awaiting them.

Fake Receipts

http://www.fakereceipt.us/sales_receipt.php

The easy-to-use Fake Receipts website enables you to create a fake receipt for anything under the sun from whatever store you would like.

Airline Ticket Generators

<http://omatic.musicairport.com>

<http://returnflights.net>

These websites will allow you to create imitation airplane tickets for any airline with customized text.

Fake Concert Ticket Generator

<http://www.smorgasbork.com/ticketmaker/>

The website Smorgasbork will enable you to create a fake concert ticket with any custom text desired. Perfect for embedding word and number clues for breakout games.

FakePhoneText

<http://www.fakephonetext.com>

The website FakePhoneText will allow you to create a fake iPhone text message conversation (figure 5.7).

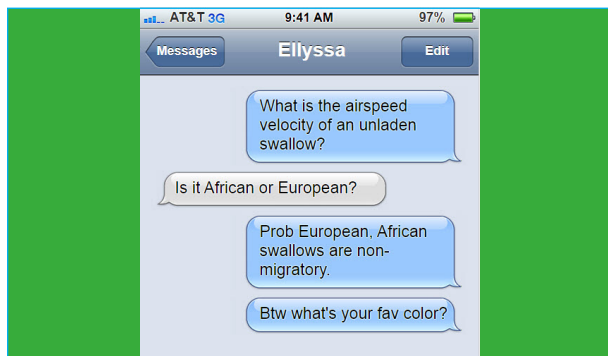


Figure 5.7. It's easy to create fake phone messages to hide clues using FakePhoneText.

The Ransomizer

<http://www.ransomizer.com>

Not a puzzle per se, but an interesting visual effect, the website The Ransomizer enables you to quickly create ransom note-style images.

Just for Fun

Match the Memory Game

<https://matchthememory.com>

The Match the Memory game creator allows you to create your own *Concentration* style game in which tiles are flipped over two at a time in order to find matches. For my final puzzle in my *Dracula's Curse* breakout, I created a fun Match the Memory game in which players were tasked with matching the actors who had portrayed Count Dracula in film. Winners of this game receive a message clue that helps unlock the 6-digit word lock in the game:

Message from Ellyssa Kroski for the winner!

Clue: City Dracula traveled to in the novel.

Try out my Match the Memory game for yourself here: <https://matchthememory.com/Dracula>.

BigHugeLabs

<https://bighugelabs.com>

Create everything from magazine covers, movie posters, and badges to trading cards and billboards using the website BigHugeLabs.

The Breaking News Generator

<https://www.breakyourownnews.com>

Create your own image of a breaking news story with the Breaking News Generator (figure 5.8). Upload your own images, post a headline and ticker, and you're all set!



Figure 5.8. Create fun breaking news images with the Breaking News Generator.

Breakout EDU Digital Resources

<https://bit.ly/35kRMZQ>

For even more puzzle creation websites such as those discussed in this chapter, be sure to check out the massive community-sourced list Breakout EDU Digital Resources!

How to Create a Digital Breakout

Creating the Site

This is it! You have built your lock form, crafted your puzzles, and written your narrative. The time has come to bring all of these elements together into one unified website to display your game.

Bringing It All Together

There are many free options for creating a website for your digital breakout, but the most popular and user-friendly is Google Sites. This will also be the most seamless option because nearly every other component that we created for the game was built using Google applications, which easily embed within Google Sites.

Name and Brand Your Breakout

To begin, return to your Google Drive breakout folder, go to + New located on the left-hand menu, select More, and the menu will expand to allow you to choose Google Sites. The first thing that you will want to do is change the document name from “Untitled site” to the name of your breakout. At this time you can also change your page title in the center of the banner to the breakout game title. You also have the opportunity to upload your library’s logo on the upper left-hand side of the banner.

If you mouse over the banner, you have several options for formatting. You can change the size of the banner or “header” on the page by selecting “Header type.” You can remove the banner altogether to leave only your breakout title by highlighting “Title only.” You can opt for a “Large banner,” which will expand the header area, or you can expand it even more by

choosing to make it a “Cover” image. I would recommend keeping this at the default “Banner” setting. Mousing over the banner also presents the option “Change image,” which allows you to upload an image to display as the background banner. I chose to upload a black-and-white drawing of Bran Castle for my banner image.

Add Your Narrative

Directly below the banner image you have the ability to insert a text box in which to add your breakout’s description or narrative. To the right-hand side of your new Google Site is a three-tabbed editing interface. Within the default Insert tab, select the very first option, “Text box,” and the application will add it for you in the first available place, which is below your header.

Open up a new browser tab and navigate back to your breakout’s Google Drive folder to find your narrative document. Copy and paste your breakout’s narrative into this new text box.

Next, mouse over your new narrative area, or text box, and a new menu will appear floating to the left with formatting options. Select the first option, which is a palette icon, and select “Emphasis 2.” This will fill in that section with a background color. You can easily change that background color by customizing the page’s theme.

Customize Your Theme

You can change your breakout’s color scheme by clicking on the Themes tab on the editing interface to the

right. There are several complete theme sets to choose from as well, each with customizable font styles and color palettes within each.

TechTip: You can preview your breakout site at any time by selecting the dual device icon on the top right of the website. This will provide you with a preview of how your game will appear and be displayed on multiple devices.

Embed Your Lock Form

It's time to embed your lock, which will be integral to your breakout game. On the right-hand editing interface, return to the Insert tab and scroll all the way down through the options. Select the next-to-last choice, which will be Forms. This will bring up all of the Google Forms that you have created with the most recent first. Find your form from the preview list, click on it, and select Insert to embed it into your form. Google Sites will automatically place the form in the next available area, which is the left-hand side of the page below your narrative. This new section will have all of the same formatting options as the text box created earlier.

Embed Your Puzzles

Now that the lock form is in place, all that is left to do is to link to all of the puzzles and clues that you created so that the player can begin to solve your breakout. At this point you will notice that the right-hand side of your breakout site still has plenty of room to display all of your game's puzzles.

Designers of these games utilize many methods for providing players access to their puzzles, and we will discuss each in turn. Most present some combination of the following techniques for sharing breakout challenges. Whichever route you choose, each of these will fit comfortably on your page.

Hidden Links in Text

You may choose to provide simple links to your puzzles within your narrative description of your game by hyperlinking random words that players will need to find as they scour your site for clues. You can also create a new area to display a riddle or key piece of text that might lead players to a challenge.

Double-click anywhere within the blank right-hand column of your page. This will launch a wheel of content choices for you to add to this space. Select the middle option, which is text. This will place a text box, perfectly sized for this column, within your page. Type in your text, and select one of the words to hyperlink. Once the word is selected, select the Link

icon in the menu bar above the text box to easily add a link to any one of your puzzles.

Embedded Puzzles

You may also choose to simply embed some of your puzzles right on your main page. One type of puzzle that is particularly good for embedding in a breakout is a color lock puzzle. This is usually an image with a relatively large group of items, all shaded with different colors. At first glance, the player might think this image is on the site for purely thematic or decorative purposes, but a closer look will reveal that there is a pattern to the shading.

One of the school-themed breakouts mentioned earlier in this report uses an image of ten backpacks of various colors hanging on the wall, which matches nicely with the premise of the breakout and may go unnoticed by the player at first. Once the image is identified as a puzzle, the player might attempt to solve it by entering a combination of colors in the order that the bags are displayed. When this doesn't work, the player will need to reason that because there are four green backpacks, three yellow, two red, and one blue that the lock combination and puzzle solution is GYRB. This is a popular type of puzzle for these games and one that is often found decorating the main page of the breakout site rather than being linked to. To embed any of these puzzle images, double-click within the right column of the page and choose Images. You can then choose to enter a URL for an image or find it in your Google Drive. To upload an image from your computer, select Upload after double-clicking, or go to Insert on the editing sidebar and choose Images, and then Upload.

Hidden Links in Images

One very popular technique for leading players to breakout puzzles while still providing a challenge is to hide links within images or groups of images. Instead of merely adding an image to your site and hyperlinking it to one of your puzzles, you may choose to add a larger image and create links within it that players will have to search for a bit. This can easily be achieved by creating a custom image as a Google Drawing and adding invisible links within it. These are called hotspots and when moused over reveal themselves as hyperlinks.

Create a Google Drawing with Hotspots

You will want to choose an image that has details or perhaps key figures or text that you can use to hide your hyperlinks. Perhaps you could use a book cover

or photo of a group of people related to your breakout. When you have found a relevant image, once again go back in to your Google Drive breakout folder, go to + New located on the left-hand menu, select More, and the menu will expand to allow you to choose Google Drawings. Within your new Google Drawing, choose Insert and Image from the main menu and upload your image. Resize and position your image to your preferences.

Take a look at your image and think about what might be significant to link from, such as a number or word or area within it. Go to the main editing ribbon toolbar at the top of the drawing and select the Shape tool. Choose whatever shape might fit nicely over or on top of that first element you chose to link and create the shape. When the size and position of the shape are directly where you want them, right-click on the shape and choose Link. Type or paste in your link.

Now you have a linked shape floating on top of your image. But the goal is to have this shape be invisible so that players need to search a bit for it. Click on the shape to select it. Go back up to the editing ribbon to the right of the Shape tool. You will see a paint bucket and a pencil icon. These are the controls for the shape filling and the shape outline. Click on the paint bucket, or “Fill color,” and choose Transparent. Do the same with the pencil or “Border color” control. Now click off the shape on the drawing canvas. Not even you can spy a shape or hyperlink on your drawing, but trust me it is still there! If you want to be sure, click back on your image where you think your shape should be and you will see it highlight. Repeat this process to create additional links to other puzzles.

You may also choose, as I did, to combine different images into a Google Drawing in order to create this hotspot image. I used a large image that I found on Wikipedia of Bran Castle as my background image. I also found a portrait of Vlad the Impaler. I brought both of these images into my Google Drawing. I used the Crop tool drop-down menu to choose a rounded crop effect for the Vlad portrait. Once I had it in the shape I wanted, I made it small and dragged it on top of my castle pic. I made three copies of the tiny Vlad image and placed them on my background image with the first. It was these Vlad images that I chose to make my hotspots within my custom Google Drawing so that when players notice these, they are enticed to click on them to go to my puzzles.

When you are done, it is important that you remember to change the privacy settings on your Google Drawing so that it will be publicly visible. Otherwise you will embed an image that no one can see into your breakout game. Once again, the default for all Google Drawings, Docs, Sheets, and so on is set to private, visible only to the creator. To change the sharing settings of this drawing, click on the Share button at the top of the page. Next click in to

“Advanced.” In the “Who has access” section, click on the word Change next to “Private - Only you can access.” Select the first option here—“On - Public on the web”—and save.

Once your drawing is public and viewable, it’s ready to embed into your site! Navigate back to your Google Site, go to the Insert tab on the editing sidebar, and choose From Drive. Double-click to open your breakout folder and find your Google Drawing to insert it. Use the side handles on the image to make it thinner and remove the blank space, if any, surrounding your image. Drag the inserted drawing into the right-hand column. Preview your page to see your hotspotted Google Drawing in action.

TechTip: To delete anything that you add to your Google Site, simply click on the item and press Delete on your keyboard. You will also see a floating menu appear with a trash can icon. This is another deletion option.

Change It Up

You may be perfectly happy with your breakout game as we currently have it set up. However, you may also decide to make yours a little more complex by changing to structure of your page or by adding some additional pages.

Changing the Layout

You may decide that for this or your next breakout game that you want to have a three- or four-column page displaying your lock form and puzzle clues. Or you may just want columns that have designated spaces for images. Within the editing sidebar’s Insert tab, under Layouts, there are several choices for adding layout combinations such as these. Clicking on any of these layouts will add those blocks or modules below your content. If you’d like to switch to one of these layouts instead, simply drag the new layout structure above your content and pull what you’ve already added into the new layout.

Adding Additional Pages

Some of these breakout games span multiple pages within a website to make them that much more challenging for players to find and solve clues. If you want to make your game a little bigger, incorporating a large number of locks or perhaps two lock forms, you might consider adding additional pages to your Google Site. Adding new pages is simple and straightforward: go back to the editing sidebar, click on the Pages tab, and choose the plus (+) sign at the bottom. This will automatically create a new page for you with your same theme and color choices. You will notice

that Sites also added a menu for site navigation at the top of your website so there's no need to figure out a way to link to your pages.

Publish Your Site

When you are satisfied with your website, click on the Publish button on the top right of the interface. This will automatically change the sharing settings on your Google Site to public. You will need to do this every time you edit your site from now on. Google will save your drafts containing all of the future edits that you make private and won't publish them until you click the button again. In this way you can feel comfortable continuing to make changes to your site as they won't be seen by anyone until you are ready to have them go live.

When you first click on the Publish button, it can be a bit confusing because the site will launch a dialog box that appears to be prompting you to enter an entire web address for your site. Note that this "Web address" box is just prompting you to name your breakout, and whatever you enter here will appear at the end of a Google Sites URL. For example, I entered "draculascurse" here when I was designing my breakout site and underneath the "Web address" box I could see the URL changing to

<https://sites.google.com/view/draculascurse>

Type in the name of your breakout game here and don't worry, it won't publish until you click the Publish button at the bottom. You may also choose here to exclude your site from search engine results by checking the box at the bottom.

One more useful feature to know about before calling this a wrap is the ability to link your breakout game with Google Analytics so that you can view site

traffic statistics. If you'd like to do this, click on the three dots at the top of the interface and choose "Site analytics" to enter your Google Analytics tracking ID.

Alternatives to Google Sites

There are several alternative applications that you could utilize to create free websites and online spaces in order to incorporate all of your breakout puzzles and lock form.

Smore

<https://www.smores.com>

Smore enables users to create beautiful newsletters and flyers with easy-to-use drag-and-drop tools, all for free. Users can embed images, links, text, and other content into these interactive newsletters. This is a great option for creating a simple site to house a digital breakout.

Weebly

<https://www.weebly.com>

Weebly is a free website creation tool and host. Users of this service can create both simple and robust websites with easy-to-use drag-and-drop tools, perfect for those without HTML or website design knowledge.

Deck.Toys

<https://deck.toys>

Deck.Toys is a gamified edtech tool specifically designed to create engaging student experiences online. The application allows users to create complete lessons in minutes with drag-and-drop tools.

Testing, Tips, and Assessment

You've done it. Congratulations on creating your first digital breakout. But you're not done yet! Be sure to read through all of the tips in this chapter before sharing the link to your new breakout game.

Test Out Your Game

It is very important that you test out your breakout game before you announce it to the public. I can't tell you how many breakout games I have attempted to play online only to have a crucial item not available to me because the creator didn't change the privacy setting correctly. With individual sharing and privacy settings on so many moving parts, it is absolutely essential that you put your game through its paces before passing it along.

SIGN OUT!!

You can test your breakout until the cows come home, but if you're still logged in you won't get the same experience as a player will. And more importantly, you won't see what's been made publicly available and what remains private because everything is visible to you as the creator.

Begin by closing all extra tabs and navigating back to your Google Drive page. Click on your profile image on the top right and sign out. Close the browser. Open a new browser, go to <https://drive.google.com>, and make sure that you aren't still signed in. Once you're sure you've been signed out of the entire Google platform, copy and paste the URL for your breakout into the browser.

Go through your digital breakout as if you were a player checking out the game for the first time. Walk yourself through every aspect of the game including navigating through all puzzles and clues and eventually entering every lock combination until you reach your victory message telling you that you have completed the game. Check off the following list to be sure that each component is in place and visible:

- Library logo is visible.
- Background image in main banner is visible.
- Narrative is properly placed.
- Lock form is visible and working correctly.
- Hotspot and other images are visible.
- All hyperlinks to all breakout puzzles are working.
- All breakout puzzles are visible.
- All lock combinations work correctly.
- Final "Congratulations!! You've won the breakout game!" message is displaying once the breakout has been beaten.

If any component is not available to display, you will know that you need to change the privacy or sharing settings on that particular item such as a Google Drawing, Sheet, Doc, and so on.

Beta Test

When you are sure that all elements of your digital breakout are working correctly and all locks are visible and effective, share the game with a few people in a limited "beta test." This test will serve to examine the playability of the game and provide you with feedback about whether particular puzzles are too difficult or too easy. You will discover whether you hid access to puzzles or clues too well for players to find them and how successful your challenges and narrative are at immersing your players in the game.

This may all seem overly cautious, but just remember the old adage, "measure twice, cut once." It's far easier to test out your game rigorously now to check for errors, and even have your coworkers or volunteers run through it a couple of times, than to launch it and be faced with an inundation of emails from frustrated players who might not return.

Tips, Tricks, and Advice

Here are a few final tips for designers of these unique games.

- Players of traditional video games truly appreciate finding *Easter eggs*, which are hidden items that offer bonuses or added content to the game at hand. These sometimes even become a mini-game within a game. Consider adding one or more of these rare items to your digital breakout to add some more excitement.
- *Stick to your theme* no matter how tempting it may be to create nonrelevant puzzles. It is jarring for players who are engaged with a game to come upon puzzles or images that don't sync with the rest of story and atmosphere. For example, if your breakout is set in the Wild West, don't create puzzles that utilize iPhone messages.
- It is important that your puzzles *don't frustrate players* to the point of abandoning your game. Be sure your instructions are clear and so is your solution. When you are designing your puzzles, don't present the multiple possibilities that would work for solving your puzzle as this overcomplicates the solution. Present the player with one resolution so that they are sure they've got it when they find the answer.
- Consider including at least one *red herring* in your game, which will stir up a bit of mystery about your breakout as well as raising its level of difficulty. This could include a hyperlink that goes to a completely unrelated page or image.
- *Have fun!* Don't forget that these are games and are meant to entertain at the same time as providing educational value. If you are having fun while you are creating your game, that spirit will shine through to players who are undertaking your game.

Assessment

How do you know if your breakout game was a success? Were you successful at meeting the educational goals and learning outcomes that you brainstormed at the beginning of this process? There are a couple of quantitative methods that will help you measure the success of your digital breakout.

Lock Form Statistics

Sign back in to your Google Drive and locate your breakout's lock form. Rather than viewing and editing the Questions tab as we did to build the breakout, click on the Responses tab. Within this tab there are two additional tab options, Summary, Question, and Individual. Keep the default Summary responses selected, and you will be able to view the following information:

- how many responses to your lock form you

- received total (displayed at the top of the page)
- what all of the responses were that you received for each one of your locks
- the percentage of correct responses you received (displayed in chart form for each lock)

The information here is valuable because you will be able to see where players went wrong (or right!) when entering their responses to each of your challenges and exactly what those wrong responses were.

At the top right of this form you have the option to create a spreadsheet of these statistics by clicking the spreadsheet icon. You can also choose to download or to print all responses, and even to be notified by email of any new responses, by clicking on the three dots.

Google Analytics

You may have chosen while designing your game to connect your Google Analytics account with the Google Site that you created to host your digital game. If so, you now have the opportunity to go in and see just how many people visited your site. You can compare this number to the total responses received on your lock form in order to determine how many of your visitors stuck around long enough to play your game. This is significant because if you had 1,000 visitors over the last month, but only 50 filled out your lock form, you may decide that your game is too difficult. Google Analytics will also provide you with useful information such as

- where your traffic is coming from geographically
- how players found the link to your website (the referring URL)
- what time of day your visitors were on your site
- what types of devices visitors use
- the average amount of time they spent on your page

And if you create a large site with multiple pages for your breakout, that is all the more information that Google Analytics would have collected for you.

What's Next?

You have conquered the digital breakout game. What do you do for your next adventure? Fear not, there are plenty of other entertaining educational tools out there for you to master next. Here are just a few.

Twine

<https://twinery.org>

Twine is another completely free tool that you can use to design educational games. To be specific, it is

an open-source software application that will help you create an interactive fiction adventure. If you ever played old-school video games where you needed to choose whether your character would do things such as “Cross bridge” or “Pick up axe,” you will experience a wave of nostalgia when you encounter Twine. This free software will help you build your own such adventure games. And the best part is that anyone can use it. There is no need to write any code in order to create your game.

Scratch

<https://scratch.mit.edu>

Scratch is a visual programming language that can be used to create interactive stories and games by utilizing programming blocks of different colors. It was designed as a programming tool that can be learned by children. Anyone can master this type of coding. The Scratch community posts plenty of examples of projects, ideas, and helpful tutorials to get you started.

Live Escape Games

When you are done with online adventures, why not create a live version of your games? Real-world escape games are incredibly popular and offer a world of possibilities of their own. Pick up a complete lock kit and check out the hundreds of free scenarios including A–Z instructions at Breakout EDU and challenge your library patrons to a real-life quest. Or design one from scratch!

Breakout EDU

<https://www.breakoutedu.com>

Scavenger Hunts

Send your library patrons on a scavenger hunt around the library. Send them to the stacks to find a particular call number, to circulation to request a form, or to the makerspace to discover a 3-D printed item. These games are a perfect way to transform boring library orientation presentations into an exciting and engaging activity.

LARPs

LARPs, or Live Action Roleplaying Games, completely immerse players in a themed game by casting them in the roles of key characters. Libraries can and already are actively hosting LARPs within the library for patrons eager for this type of engrossing play experience. Download a free LARP scenario and from the

RPGnet Wiki or other resource and tailor it to send patrons on an epic library quest!

RPGnet Wiki: LARP Scenarios

https://wiki.rpg.net/index.php/LARP_Scenarios

Augmented Reality Experiences

Free augmented reality tools such as HP Reveal allow users to create virtual layers over real-world objects to provide additional information, videos, and even images relevant to the item. When end users scan these items with their mobile devices, they are served up web pages, text, videos, alternate images, and so on. This can create quite an engaging experience for participants. At the New York Law Institute, I create a rare books exhibit with some of our older items such as General Washington’s copy of Corbin’s Code de Louis XIII, 1628, and Alexander Hamilton’s Law Register in a Treasures and Technology event. I didn’t want these rare resources to be damaged by visitors handling them, so I chose to incorporate augmented reality layers into the experience. When visitors held their mobile devices over each book, they were able to view further information about what was inside. When they waved their phones in front of the images of our reference staff (also treasures!), they saw the images come to life with videos of staff waving at them and saying hello in a Harry Potter portrait-type experience. Visitors couldn’t wait to get to the next item to see what it would reveal.

HP Reveal

<https://www.hpreveal.com>

Consider Hybrids

In addition to these alternatives to digital breakout games, you may also consider creating hybrid adventure games that combine live or real-life components such as a scavenger hunt, short escape room game, or perhaps a library orientation tour or a training presentation and following it up with an online component. Perhaps students or players are charged with finding physical clues to digital locks throughout the library following a guided tour or perhaps digital searches of the library’s online catalog. Or perhaps use of the databases could lead to the combinations for actual physical lock boxes that open to present students with library swag, candy, or other physical rewards.

Whatever you choose to create, it is sure to be a hit with library patrons who will appreciate your creativity and benefit from your educational content. Best of luck on your game design adventure!

Resources

Within this chapter you will find a combination of books, articles, online directories, and videos that will provide you with even more inspiration and guidance in creating your own digital breakout adventures. Additionally you will find invaluable help from fellow librarians and game developers within the recommended communities.

Directories

Breakout EDU Digital Sandbox

<https://sites.google.com/site/digitalbreakoutjb/sandbox>

This massive listing organizes of hundreds of community-created free breakout games in subject areas ranging from history to music to library science and includes all grade levels from K–2 to adult. After you have created your first digital breakout, consider adding it to the directory here and join the community!

Digital Breakout Tools

<https://www.symbaloo.com/mix/digitalbreakouttools>

This Symbaloo board is a visual collection of links with sample breakouts, tutorials, and tools for easy digital breakout creation.

Educational Resources

Build Your Own Digital Breakout

<https://sites.google.com/site/digitalbreakoutjb/how-to>

This Build Your Own page is a list of instructional screencasts to help you begin building your own digital breakouts from the folks at Breakout EDU. They cover topics such as how to use Jigsaw Planet, how to create a lock form, how utilize FormMule, and much more. This is great starting point for those who prefer to learn visually.

Build a Breakout Experience in Metaverse

<https://youtu.be/bkCXRQndkgg>

This step-by-step video includes detailed instructions for how to create a digital breakout using MetaVerse, a free augmented reality platform.

Digital and Physical Breakout Edu Games

<https://www.youtube.com/playlist?list=PLe8tTlhDRH6H482EVeMdL-Ym3OeQYJln7>

or

<https://bit.ly/2PKZlGk>

The EmTech (Emerging Technologies) channel on YouTube has a series of six instructional videos for creating digital breakout games and hybrid live and online games detailing how to use shorts in Flipgrid to create digital clues, how to build a breakout in OneNote, how to create interactive clues in Google Drawings, and more.

YouTube Videos

<https://www.youtube.com>

A quick search of YouTube for the term “digital breakout” will return hundreds of results, including videos walking game designers through every aspect of creating these unique games and their puzzles. Get inspiration for challenges and technology platforms here.

Articles

Mastering the Digital Escape

<https://www.smore.com/cvf4p-digital-escapes>

This helpful article by Jana Dixon details the steps to creating a digital breakout using the Smore platform and provides numerous examples.

Resources for Creating Digital Breakouts: Ideas for Making Your Own Activities

<https://www.theliterarymaven.com/2017/04/break-out-digital-escape-room-ideas.html>

The Literary Maven (Brynn Allison) has written an excellent article on how to design your own digital breakout games.

Create a Digital Breakout

<https://infinitelyteaching.com/2018/12/18/create-a-digital-breakout>

This tutorial article from Infinitely Teaching provides a helpful infographic and illustrated instructions for designing digital breakout games.

30+ Digital Escape Rooms (Plus Tips and Tools for Creating Your Own)

<http://ditchthattextbook.com/30-digital-escape-rooms-plus-tips-and-tools-for-creating-your-own>

This useful article from Ditch That Textbook provides more than thirty examples of complete digital breakouts culled from Twitter responses.

How to Create a Digital Breakout for the Classroom

<https://engagingandeffective.com/how-to-create-a-digital-breakout-for-the-classroom>

This instructional article from Engaging and Effective Teaching provides details for how to design these online games complete with video tutorials and puzzle ideas.

Community: Facebook Groups

Digital Breakout

<https://www.facebook.com/groups/379270622498900>

League of Librarian Gamers—ALA GameRT

<https://www.facebook.com/groups/LeagueOfLibrarianGamers>

Breakout EDU

<https://www.facebook.com/groups/breakoutedu>

Library Teachers (Breakout EDU)

<https://www.facebook.com/groups/breakoutedu/library>

Library Escape Room Enthusiasts

<https://www.facebook.com/groups/1922174474731812>

Related Books

- (Spoiler: Shameless plug for my book!) *Escape Rooms and Other Immersive Experiences in the Library* by Ellyssa Kroski, October 2018, American Library Association, <https://www.alastore.ala.org/content/escape-rooms-and-other-immersive-experiences-library>.
- *Breaking into Breakout Boxes: Escape Rooms in Education* by Holly Elizabeth Johnson, July 22, 2017, CreateSpace Independent Publishing Platform.
- *Escape the Game: How to Make Puzzles and Escape Rooms* by Adam Clare and Samet Choudhury, August 3, 2016, CreateSpace Independent Publishing Platform.

You should now be well on your way to creating your very first digital breakout game for your library. Don't forget to share a link to your game in the BreakoutEDU Digital Sandbox list as well as your newfound expertise within the community!

Library Technology

R E P O R T S

Upcoming Issues	
May/June 56:4	Virtual Voice Assistants by Win Shih and Erin Rivero
July 56:5	Digital Legacy edited by Heather Moorefield-Lang
August/ September 56:6	One Country, One Library by Mirela Roncevic

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