

Breaking Out of the Ordinary:

Using BreakoutEDU and Escape Rooms in the Academic Library

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Introduction

An escape room is a live-action experience in which a group of people is locked inside a room and challenged to break out. Once inside, participants are presented with an array of puzzles, clues, and riddles that, when solved, will allow them to escape. Over the years, these recreational activities have become increasingly popular. According to a *New York Times* article, the number of escape rooms in the United States has significantly increased from only twenty-two in 2014 to around two thousand on record today.¹ The puzzles and riddles involved in these events are not only fun but require the use of critical thinking, teamwork, communication, and creativity to be completed, all of which are aspects necessary for active and social learning.

Social learning, or social constructivism, is a learning theory which argues that students learn better by interacting with others and their surrounding environment.² In escape rooms, students interact with each other and their surroundings to complete the activity. Through solving the clues, puzzles, and riddles, they construct their own set of knowledge, rather than having knowledge transferred to them by an instructor. This type of gameplay gives students agency over their own education and creates an active learning environment, leading to a deeper understanding of content and an increase in motivation. Holdereid and the librarians at the University of North Carolina at Pembroke found that the students in an active learning class saw an increase in comprehension, based on pre and post-test results, over a lecture-driven group.³ Using escape room lessons in the classroom is one way to create this type of environment.

In addition to an increased understanding of content, incorporating gamification through the use of escape rooms also provides students with extra motivation since, according to Kim, gamification's ability to capture people's attention makes it a powerful tool.⁴ The sense of competition and engaging nature of these activities allows students to develop intrinsic motivation to complete them. Lastly, the flexibility in developing solutions to the puzzles allows students to develop multiple ways to approach the problems. When these activities are aligned with specific learning outcomes—in this case, information literacy learning outcomes—they can be powerful teaching tools.

By using library resources and services, you can design escape rooms, or similar activities, for instructional use. In this chapter, I explore some of the ways you can incorporate them, describe a specific case study, and discuss its application to information literacy, along with some additional uses.

Breakout Activities and BreakoutEDU

Setting up an escape room can often be an elaborate task that normally requires the design of an entire room, including intricate props and hidden items. “Breakout boxes,” by contrast, are tools that can be used to easily incorporate these activities into the classroom through the use of locked boxes. With these kits, students are required to unlock a box or set of boxes, rather than discovering the way out of a room. This allows the activity to be contained in a smaller area and makes it portable. Students figure out how to open the boxes by solving various puzzles and clues, as in a traditional escape room.

To develop my breakout activities, I used BreakoutEDU, a learning game platform that sells these kits to educators. Each one comes with the essential items needed to develop the activities. These include several different types of locks, boxes, invisible ink pens, UV flashlights, and more.



Figure 11.1

A Breakout EDU kit with its contents.

In addition to the kits, BreakoutEDU also provides a variety of pre-made lesson plans. Most of the lessons are open access through their website; however, some require a subscription. The subscription also includes a series of digital games and a digital game developer. The pre-made lessons developed by BreakoutEDU, although geared mostly toward a K-12 audience,

can easily be adapted and leveled for higher education. They are also a good source of inspiration when developing your own activities. For example, when I designed one, I borrowed ideas from a pre-made lesson developed for a similar class titled Robot Apocalypse.* It inspired the theme for my surrounding story along with ideas of where to hide combinations and lock puzzles. The pre-made lessons offered by BreakoutEDU can be extremely helpful as you begin creating your own escape rooms.

Although the BreakoutEDU kits are convenient, developing an activity does not require the purchase of one, as all of the items needed can be purchased separately. A lockable toolbox can be used for any locking containers and can usually be purchased on Amazon, at any hardware store, or at a dollar store. However, it is important to make sure there is a spot to place a lock or hasp—a hinged fastener used to lock one box with multiple locks. A hasp can either be purchased or, if you have access to a 3D printer, it can be printed to attach to the box.† Other locking container options include using a three-holed pencil pouch in place of a small lockbox. See figure 11.2 for instructions.



Figure 11.2

Step 1: Fill pouch with clue, puzzle, etc. Step 2: Fold lengthwise, leaving rings exposed. Step 3: Fold widthwise so two ring holes and zipper hole align. Step 4: Insert lock through all three holes.

In addition to the boxes, locks can also be purchased separately. Common locks used in a breakout activity include a directional lock, four-letter word lock, five-letter word lock, key lock, and four- and three-digit locks, which are

all available through Amazon. If you are interested in including shapes and colors as combinations, you can do some customization of the directional or digit locks by adding shapes or graphics. Additional items used include the black light or UV flashlight, black light reactive ink pens, and USB flash drive, which can all be purchased through Amazon as well. If you are interested in using a red lens viewer, a tool designed to reveal hidden text, you can create one using red acetate or transparency film on an index card

* The lesson Robot Apocalypse can be found at <https://platform.breakoutedu.com/game/robotapocalypse>.

† An open-sourced 3D file of a printable hasp can be found at <https://www.thingiverse.com/thing:1547143>.

or card stock.* Hint cards are another essential feature of breakouts. The class or group is usually given two hint cards at the beginning of the activity, which they can choose to use whenever they feel they need some extra information. Hint cards can be made using index cards or card stock.

Once you have the components necessary for creating and developing a breakout, you will be ready to start incorporating these games into the library classroom. The following case study serves as an example of one of these from inception to implementation.

Case Study

In my previous role as the research and information literacy librarian at the State University of New York (SUNY) at Fredonia, I used BreakoutEDU to develop escape room activities for various occasions. Based on informal observations, feedback, and formal data collection, I found that these were positive endeavors. The breakouts not only helped students achieve learning outcomes but also provided an engaging and fun learning environment.

Every semester, sections of the Computer Science Overview class visited the library for an instruction session. The following case study pertains to my experience designing and implementing a breakout activity for the various sections of this class, along with some additional ideas and examples for you to use when developing your lessons.

This class is a first-year course in which students are required to write a two- to three-page paper and present on an assigned topic. The topics are usually related to an aspect of computer science, such as a popular technological company, a form of technology, or a prominent figure within the computer science field. The purpose of the library instruction session is to introduce students to the different resources that are available as well as how to navigate the library's website. This class had previously been taught as a virtual scavenger hunt in which students were split up into groups and given a handout that contained ten questions about the library's resources and services. Through completing the scavenger hunt, the students were shown various resources on the library's website that they would need to use for their assignment. Each group was given a team name and received points for correct answers and for finishing first. Their competitive natures came out as they raced to finish their worksheets and expressed their frustration when a team member did not have the correct answer. From these observations, it could be seen that the competitive aspect of the lesson provided an extra incentive for the students. There were features of this lesson that translated well into a breakout activity, as each question was essentially a clue that had to be solved. This made it an ideal class in which to begin developing and using these activities.

In my experience, the best way to develop a breakout or escape room is to use the concept of backward design, in which you first outline your learning outcomes with your desired results, then identify what evidence will illustrate that the students have achieved the desired result.⁵ The learning outcomes I outlined for the class included:

* This blog post from Toronto Teacher Mom explains how to create your own red lens viewer <http://bit.ly/2MqHlHg>.

- Students will be able to find the recommended resources used for computer science research.
- Students will be able to search for books using the library catalog.
- Students will be able to conduct a search in a database.
- Students will be able to use the databases Computer Source and Business Insights: Essential.
- Students will know how to find out when the library is open.

The students' ability to solve the puzzles and open the locks serves as evidence for the learning outcomes. For example, in the breakout activity, I hid a message in invisible ink that included the title of a book along with the question, "How many pages?" This clue required the students to use the library catalog to search for the book and discover how many pages it had to unlock the three-digit lock. That solution was directly tied to the learning outcome, "Students will be able to search for books using the library catalog," and it provided evidence that the learning outcome was met. This is also just one example of the different types of puzzles that can be developed.

There are additional ways you can incorporate information from a book as a combination to one of the locks. For instance, you can include call numbers or titles as possible solutions. The BreakoutEDU kits make this easy because the locks they provide are more customizable than those purchased elsewhere, as they allow you to mix both numbers and letters for different combinations. Additionally, if you would like to expand the activity by having students explore the library outside of the classroom, you can lead students to physically locate a book to retrieve something you have hidden there. These are just a few examples of how you can use books and catalog searching for a breakout.

LibGuides or other library subject guides can also be used to include hidden clues and documents. In my class, the students had to locate the computer science research guide, which highlighted the recommended resources for performing research on that subject. I had added a box to it titled "Top Secret," which contained a PDF document of a maze that students had to solve to unlock the directional lock. Other potential uses for LibGuides in these activities include hiding links to quizzes, links to the next clue, or a secret message.

Library maps and floor plans are also great options for breakout clues and puzzles. For example, on a map, circle a word or place in invisible ink that the students may have to use as a solution or must physically visit, which will introduce the students to an area of the library. In the computer science class, I had the interlibrary loan office circled in invisible ink with the word "Loan" underlined, which was the solution to the word lock.

I also made regular use of databases and database searching by using the sources found within them as possible solutions. In one instance, I directed students to a specific database to search for an article and identify the ISSN of that journal. I then incorporated that as a key to one of the locks. Other online tools, such as quizzes, can also be used. For this experience, I used our campus' learning management system to incorporate a short three-question quiz. Students were led to it through a hidden link found on a USB flash drive. The quiz asked questions about the library and, once completed correctly, it provided them with another clue. Using different online tools such as quizzes and LibGuides are easy ways to provide additional puzzles for your experience. Designing

these also requires a great deal of creativity and out-of-the-box thinking. Do not hesitate to ask those around you for ideas or to search the internet, as there are a lot of resources and tools out there as well as librarians sharing their designs.

Although developing the clues and puzzles may be deemed the most important aspect of creating an escape room or breakout, I would argue that an equally important aspect is developing a story. Those who have experienced an escape room before know that each one has a story that motivates the players to continue and provides context for the mystery. Students may not be as interested in the activity if it is presented as “Learn about different aspects of the library to save the day!” In the activity I designed for this class, I decided to develop a storyline that was technology-themed. Inspired by the *Terminator* movies and a pre-created BreakoutEDU lesson, I created a scenario in which the students received a message from the future telling them that mankind had been overrun by robots known as “eliminators.” They were told that to stop the eliminators, they had to solve the clues, unlock the box, and destroy the information located inside. This not only provided context for the students and an end goal to drive them forward, but it also helped me in designing the clues, as I included *Terminator* references throughout. The students had fun with the reference and, from the feedback I received in the moment, appeared to find the robotic elements I incorporated engaging. Students gave a great deal of impromptu feedback afterward, including “That was dope!” If you are struggling for ideas when developing a theme, it helps to think about what is happening in pop culture at the moment and how you can incorporate it. Alternatively, if your escape room is being designed for a specific class, the class’s subject could be a great inspiration for your theme. For instance, if the breakout is being created for a medieval history class, the story might revolve around a plot to assassinate a king. It is also important to collaborate with the professor to ensure that the activity meets their needs and does not contradict with what they are teaching. This can also help you in designing the experience, since they may provide you with specific information and resources. An interesting story provides for a rewarding experience for the students.

When designing a breakout, there are also various ways to organize it, depending on the resources you have. The Computer Science Overview classes had twenty to thirty students, so I split the students up into five or six groups of five, with each group getting their own box. Each one was set up the same way with identical locks, combinations, clues, and puzzles. This may make it easier for other groups to cheat, but I have found that if you set each group far away enough from each other, cheating can be avoided. Also, the desire to be the first group to complete their box provides extra motivation for the students and creates a competitive atmosphere. Banfield and Wilkerson discuss how competition itself provides extra incentive for students and drives them forward, which I observed among the groups during my classes as they tried to keep their moves a secret from one another.⁶ The competitive nature of the activity added to the engagement and excitement. However, if you do not have the resources of multiple boxes, there are other ways you can still manage a class of that size.

In situations where you may only have one BreakoutEDU kit or self-made kit, applying a technique similar to the jigsaw method, a cooperative learning system, will allow you

to develop an activity for twenty to thirty students. In the jigsaw method, students are split into groups and each group member is assigned a subtopic. The students meet others with the same subtopic and discuss the information, then, when they are finished, they return to their original groups to present the information to the other group members.⁷ In a breakout, a modified version of this system could involve having one box set up at the front of the room. The class would be split into groups with each group trying to unlock only one of the locks, rather than the whole box. They would have their own series of tasks to complete, which would result in a solution for one of the locks rather than multiple solutions for multiple locks. Once they have all completed their tasks and successfully solved one of the locks, the activity is complete. In this scenario, the class is working as a team rather than competing with each other.

When you have finished developing your breakout, it is imperative that you test it to ensure that the locks work, the clues make sense, the puzzles are solvable, and that it can be completed in the allotted time. In my case, I originally tested it on a group of colleagues. However, no one in the group had done an escape room before and therefore did not understand the concept. They were skeptical as to how the students would know what to do and where to go without having direct instructions. I then decided to test it out with a group of students. They immediately took to the activity and began sifting through all the clues, searching the room, and trying to figure out how to unlock the box. My colleagues viewed this and saw how the students worked together to make logical connections to solve the puzzles and successfully complete them. We all agreed that this would be a worthwhile endeavor. The testing also illustrated what areas needed to be modified, either by including more instruction or redesign. It is also important to test each individual lock after you have set it to ensure that it is set to the correct combination. I now not only test my locks at least twice after I have set them, but I also write down the combinations to have on hand in case there are any issues during the class.

This case study provides just one example of how to develop breakout activities or escape rooms that you can incorporate into a library instruction session. The Breakout-EDU website, along with online blogs by additional librarians, can provide you with other examples and ideas for incorporating these.*

After an apparently successful implementation, I wanted to determine whether the activity was not only engaging but was also meeting the learning outcomes I had outlined. A class of twenty students was asked to complete a pre-test before the class, in which they rated a series of sources based on how often they used them for research. The sources included websites, web search engines, books/ebooks, encyclopedias/dictionaries, online journals, databases, friends/family, and librarians. This pre-test revealed that the students were mostly using websites and Google to do their searching, with 77 percent stating that those were resources they “always used.” Only 14 percent stated that they “always used” online journals and 6 percent “always used” books or ebooks. After the library session, I

* Some examples include #Future Ready | Commonly Used Tricks in Digital Breakout EDU Games: <http://bit.ly/2l2Rv8a> by Library Girl and “Escaping Library Orientation: The Introduction of Escape Rooms Into First-Year Experience Courses for Library Orientation and Familiarization,” <http://bit.ly/2JAPQBw>.

analyzed the bibliographies from their final papers and, using a rubric, determined which sources they were using for their research. While the number of websites used was still higher than any of the other sources, the percentage of online journals used had gone up from the results of the pre-test. Forty-two percent of the resources cited in their bibliographies were websites. Thirty-two percent were online journals. This indicated to me that the session was influencing the students' research behavior, as the data showed that they increased their use of library resources and services.

Of course, some potential issues arise from comparing bibliographies to self-reported data. For one, students may not understand the difference between an online journal and a website, which can possibly skew the data. There is also the difference in interpretation between myself and the students. For example, I interpreted dictionary.com as a dictionary/encyclopedia source, while the students may only think of it as a website. These are issues that can be resolved in future data collection with revised rubrics and surveys that include examples of each source.



Figure 11.3

Students in the Computer Science Overview class completing the *Terminator* themed breakout.

In addition to the formal data collection, I also made some informal observations from student feedback, which seemed to indicate their enjoyment of the activity. One group of students was so excited after discovering the hidden location of the key that they leaped up and ripped the poster off the wall to grab it from behind the poster. I also received many positive comments and questions afterward, such as students who exclaimed how different it was to anything they had done before and asked if I did other activities like this, expressing interest in participating in those as well. There was also a group of students

who I was convinced were not enjoying themselves at all because I had to walk them through almost the entire lesson so that they could finish in time. However, a few of them approached me afterward to say it was “cool” and that they had a lot of fun. These observations demonstrated that the activity was enjoyable.

As shown through the data I gathered from my work at SUNY Fredonia, breakout or escape room activities are effective in teaching students about library resources and services. They also introduce students to different cognitive abilities required for higher-order thinking, information gathering, and other research-related tasks, all of which are objectives outlined in the *Framework for Information Literacy for Higher Education*.

Connections to Information Literacy

Breakouts and escape rooms align well with the *Framework for Information Literacy for Higher Education*,⁸ specifically, the frames Information Creation as a Process, Research as Inquiry, and Searching as Strategic Exploration, as illustrated by the activity I designed for the case study.

The first frame, Information Creation as a Process, states, “Information in any format is produced to convey a message and is shared via a selected delivery method. The iterative processes of researching, creating, revising, and disseminating information vary, and the resulting product reflects these differences.”⁹ When participating in breakout or escape room activities, students are presented with information in a variety of formats that they need to interpret in an effort to solve the puzzle at hand. The information may be understood differently depending on the format in which it is presented.

Students demonstrate a knowledge practice of this frame by monitoring the value that is placed upon different types of information products in varying contexts.¹⁰ In the breakout, information such as videos, graphics, and posters have additional meanings based on their context. An example of this can be seen in my use of the ISSN of an article. Normally, it provides identifying information, but in this case, I have used it as a solution to one of the locks. A disposition listed under the Information Creation as a Process frame states, “Learners who are developing their information literate abilities accept the ambiguity surrounding the potential value of information creation expressed in emerging formats or modes.”¹¹ This is illustrated when the students are presented with a graphic that says, “When in doubt, ask a librarian.” They are then supposed to use that information as a signal to ask me for help or discover the “ask a librarian” poster found in the room which has the key hidden behind it. The graphic is vague but presents relevant information; in solving this, students are learning the value of seemingly ambiguous information.

The frame that is covered in its entirety is Research as Inquiry, which states, “Research is iterative and depends upon asking increasingly complex or new questions whose answers, in turn, develop additional questions or lines of inquiry in any field.”¹² The structure of a breakout activity involves students following a set of prompts, developing questions based on those prompts, and seeking answers until a final solution is reached. This style corresponds with Research as Inquiry in that it mimics the process of inquiry and exploration needed for proper research. Students develop an initial question based on their first clue,

which then leads them to produce more questions that get increasingly complex as they make their way through. One Research as Inquiry knowledge practice states, “Learners who are developing their information literate abilities formulate questions for research based on information gaps or on reexamination of existing, possibly conflicting, information.”¹³ Students are bridging information gaps, based on their questions, by making connections between the material presented to them and the task they must accomplish. This is exemplified when the students are given a clue that states, “Search in Computer Database for Sarah Connor. We need to find her ISSN.” This requires the students to formulate questions such as, “What is Computer Database?” “How do I access it?” “What is an ISSN?” “Where is it located?” They then make the connection that Computer Database is the name of a specific database and that the ISSN is an identifying number found within the results of the search for Sarah Connor.

In addition to the knowledge practices found within the Research as Inquiry frame, several dispositions are also covered. Students who exhibit the disposition of seeking appropriate help when needed use the hint cards, which are supplied during a breakout at appropriate times.¹⁴ They can choose to use their hint cards as they feel necessary and when they do, I give them additional information to help them move forward. Another disposition states, “Learners who are developing their information literate abilities maintain an open mind and a critical stance.”¹⁵ Students are required to complete the breakout by constantly questioning and analyzing the information they find and applying it logically to the scenario.

The Searching as Strategic Exploration frame is also addressed through breakouts and escape rooms. It states, “Searching for information is often nonlinear and iterative, requiring the evaluation of a range of information sources and the mental flexibility to pursue alternate avenues as new understanding develops.”¹⁶ Students find and analyze a variety of information sources while trying to complete each task. This sometimes involves revisiting materials that may have previously been used for something else. For instance, when the students are shown a video at the beginning of the breakout, they also receive a seemingly innocuous transcript of the video’s message. As they continue throughout the lesson and unlock a smaller box, they discover a UV flashlight hidden inside, which is used to reveal a hidden message within the transcript. This illustrates the need to return to information previously used to discover something new within it. It may seem repetitive or nonlinear, but it ultimately leads the students closer to their goal.

Students who demonstrate a knowledge practice found within this frame are expected to determine the initial scope of the task required to meet their information needs.¹⁷ At the very beginning of the breakout, students are tasked with a mission and then must decide how to proceed based on the instructions, or lack thereof, in front of them. They are guided by clues to explore different avenues of thought, along with the library’s website, resources, and services, to determine solutions for the locks. Finally, students who establish the dispositions within this frame are able to exhibit mental flexibility and creativity, as well as realize that information sources vary greatly in content and format and have varying relevance and value, depending on the needs and nature of the search.¹⁸ These activities require a great deal of mental flexibility and creativity to solve, as hints may be

obscure, and students need to be imaginative in determining what a clue is trying to tell them. They also need to be able to identify what aspects of the information they find are needed to move forward.

Through creativity, the *Framework* can be interpreted and applied to escape rooms or breakouts, as the skills required overlap with those relating to information literacy. It allows students to develop their aptitudes through a non-traditional format, which additionally makes it a great tool for outreach and programming.

Conclusion and Further Applications

Breakout or escape room activities provide students with a different type of experience than the standard one-shot. It invites excitement and creativity into the classroom as students are challenged to interpret information in a unique way. Due to these aspects, along with the portability of a breakout box, these activities can also be taken outside of the library and used for outreach.

My experience with using breakouts in the classroom has led to collaborative opportunities with other academic and campus departments, in addition to various student groups. The Harry Potter Club discovered that I had developed a Harry Potter-themed breakout and asked if they could participate in it. The breakout was originally adapted from a lesson I had found online, and I developed it for my own entertainment. I had considered implementing it as a program in the library but could not find the right opportunity. Therefore, I was excited to hear that the Harry Potter Club was interested. During one of their meetings, I brought over the “Harry Potter Escape Room” and they completed it. The activity itself was not related to any specific library resource or service, but it was a group of students getting face time with a librarian. As a result, they asked me to be their faculty advisor and would frequently visit me in the library. This has led to collaborative opportunities not only within campus but outside as well.

Through using breakouts, I have also had the chance to work with library media specialists, as these experiences are becoming increasingly popular among K-12 teachers. We share ideas and resources as well as discuss future opportunities, which do not involve escape room activities, for facilitating the K-16 initiative. Some of these involve library tours with middle and high school students as well as presentations on college readiness to school media specialists. The interest and intrigue surrounding these types of activities have allowed me to create new partnerships that go beyond them.

Garnering support for this type of activity can sometimes be difficult. The connections to the *Framework* provide evidence as to why these activities are worthwhile and could be discussed when pitching this idea to other faculty. Collaboration is also important, both with professors and with librarians. Working closely with a professor will ensure that your design aligns with the learning outcomes they have outlined, and teaming up with other librarians will make the sometimes overwhelming experience of designing a breakout much easier.

Through this chapter, I hope to have provided you with not only ideas for your own breakouts but also ideas of how these can be leveraged to create new and collaborative

opportunities. The examples of clues and puzzles I have outlined are meant to help with the development of yours, as well as introduce you to the out-of-the-box thinking required to create these. Take advantage of the resources that are available, whether it be online, through colleagues, or through experiencing an escape room yourself, to develop and launch a successful activity.

Endnotes

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