Putting the Puzzle Together: Creating a Library Orientation Escape Room for First-Year University Students

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Abstract

At James Madison University (JMU), many first-year students enroll in a general education course that requires them to participate in campus events. JMU Libraries offers special information literacy sessions as part of this program, but developing an engaging session that is not tied to a research assignment or academic major can be challenging. A team of librarians and staff collaborated on creating an escape room that would teach first-year students about JMU Libraries spaces, collections, and services. In this case study, we describe the development process from identifying learning objectives through playtesting to the successful implementation of the escape room as a library orientation activity. We discuss some principles of good escape room design taken from the literature as well as observations and lessons learned from our experiences.

Keywords: escape room, first-year students, library orientation

Background

At James Madison University (JMU), a large public research institution in Harrisonburg, Virginia, many students enroll in HTH 100: Personal Wellness during their first year to fulfill a general education requirement. To earn credit, they must complete a "Wellness Passport" by participating in four campus events that relate to different dimensions of wellness, including intellectual, social, and occupational

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wellness (James Madison University Department of Health Sciences, 2023). Events are listed by category on an online calendar and students pick what to attend based on their interests and schedules. Facilitators at Passport events provide students with proof of attendance by stamping a verification form with a carefully guarded Passport stamp.

JMU Libraries participates in the Passport program by offering information literacy sessions. Preparing these sessions poses special challenges for librarians. Because students choose for themselves which events to attend, Passport sessions include a mix of students from different majors and different sections of HTH 100. Without a shared field of study or even a shared class assignment, it is difficult for librarians to choose resources and examples that will be relevant to all attendees. While attendance at a particular Passport event is voluntary, lack of engagement can also be a problem. Some students choose events based solely on the convenience of the time and location or show up hoping to collect a Passport stamp with minimal effort. In recent years, JMU librarians have attempted to address these issues by developing Passport events that break out of the traditional lecture or workshop model and deal with topics of broad interest, such as biased search engine results (Schubert et al., 2022) or the reliability of popular news sources.

A notable gap in our Passport offerings was an event that would provide a general orientation to libraries services and spaces. Navigating the JMU Libraries system, which includes two main libraries on opposite sides of campus and two smaller branch libraries, can be intimidating for first-year students. Interviews with campus resident advisors (RAs) indicated that interactive, competitive, and game-based events would be appealing to students (Shuyler, 2022), and a colleague suggested that an escape room might be a fun way to teach students about JMU Libraries. Around this time, a staff member on the Libraries' Communications & Outreach team independently created a 15-minute mini escape room as part of a library game night held during first-year student orientation week. Students eagerly lined up with their orientation groups to take a turn in the room. While this escape room was purely recreational, its popularity did indicate that JMU students were enthusiastic about escape rooms and might enjoy an educational escape room held as a Passport event.

A team of two librarians and two staff members formed to develop a library escape room utilizing good game design principles. One of the librarians, the lead author of this article, had experience using games for library orientation and instruction at JMU. This included a card game developed as a transfer student orientation activity (Giles et al., 2019) and a low-tech alternate reality game (ARG) for first-year engineering majors that involved exploring the campus STEM library and finding clues hidden in the stacks to solve the mystery of a stolen book (Giles, 2015). She had also attended a memorable conference presentation about an escape

room at historic Fort Stanwix in New York (Nicholson, 2015a) that left her interested in escape rooms as educational activities. The other librarian and co-author of this article has experience using games as texts for college-level courses and a general interest in game-based scholarship for education.

The two staff members who volunteered for this project had extensive personal experience with escape rooms, geocaching, and similar activities. Both staff members have since left JMU Libraries, but their knowledge of puzzles and games as well as their skills with electronics and makerspace equipment were invaluable in the development of the escape room.

Literature Review

Escape rooms are a type of game in which a team of players works together to "discover clues, solve puzzles, and accomplish tasks in one or more rooms in order to accomplish a specific goal (usually escaping from the room) in a limited amount of time" (Nicholson, 2015b, p. 1). Escape rooms have their roots in older forms of interactive entertainment such as live-action roleplaying, treasure hunts, and point-and-click video games, but it is generally agreed the first identifiable escape room was "The Real Escape Game" developed in Kyoto, Japan in 2007 (Nicholson, 2015b; Stone, 2016). Since their inception, escape rooms have become a global phenomenon (Stone, 2016; Usborne, 2019). Escape rooms have spread into almost every sector, and are now used for entertainment, corporate team-building activities, community outreach, and educational experiences (Herther 2022; O'Reilly, 2016; Thoegersen & Thoegersen, 2016b; Stone, 2016).

School, public, and academic libraries are creating escape rooms to promote library engagement. These escape rooms are often used as an alternative to a traditional library orientation (Davis, 2019; Pate & Malone, 2018; Sewell, 2021; Wise et al., 2018). These library escape rooms often utilize state learning standards or the ACRL *Framework for Information Literacy for Higher Education* (2015) as guiding documents for their learning outcomes (Davis, 2019; Fountaine, 2020; Koelling & Russo, 2020; Thoegersen & Thoegersen, 2016b; Thoegersen & Thoegersen, 2016a). Fountaine (2020) points out that by their nature, "escape rooms align well with the *Framework for Information Literacy for Higher Education*, specifically, the frames Information Creation as a Process, Research as Inquiry, and Searching as Strategic Exploration" (p. 185). The behavior of players in an escape room "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" (Fountaine, 2020, p. 185-186).

Library escape rooms can take many forms, but typically feature puzzles that players must solve using library tools such as the catalog, databases, and call numbers (Fountaine, 2020; Reade, 2017; Sclippa et al., 2020). The company Breakout EDU sells kits containing locks, boxes, and other basic props that can be used as an alternative to setting up a full escape room (Veach, 2019), with players working to solve puzzles and ultimately unlock a box. Purchasing a Breakout EDU kit provides access to their online platform and a collection of pre-designed games and puzzles. Some educators have created their own breakout box kits (Fountaine, 2020; Mayer & Toates, 2016). Librarians have also turned to the platforms Twine and Google Forms to create virtual escape rooms, an essential adaptation during the COVID-19 pandemic (Chaudry, 2020; Kretz et al., 2021; Kroski, 2020; Sewell, 2021).

While most articles on escape rooms delve into the design process of the room, this is not always grounded in good game design principles. Nicholson (2015b; 2016) provides a comprehensive survey of escape room concepts and offers design advice for keeping rooms consistent. Avoiding "escape room logic", which Nicholson (2016) defines as "challenges that don't make sense in the genre, the settings, or the world in which the game is placed" but exist simply because they're part of an escape room, is important for keeping the immersive experience alive (p. 2). In good escape room design, all clues should lead to something significant.

Nicholson notes that "few players appreciate red herrings" or intentionally misleading clues, because "a player who spends time exploring a red herring misses out on the meaningful actions in the room…those players end up frustrated and disappointed that their contribution was meaningless" (Nicholson, 2016, p. 13). In an escape room that is intended to teach as well as entertain, red herrings could also distract players from the educational content. While it may be tempting to include false leads to prolong an escape room, some websites about commercial escape rooms (McNabb, 2017) point out that this is unnecessary as players often assume that anything in the room could be a clue. Spira (2019) quotes puzzle designer Eric Harshbarger as saying, "I never design with red herrings. The players will create their own."

Game Development
Learning Objectives

Before designing the puzzles, the development team considered the purpose of the escape room as it related to the Passport program. As Kroski (2020) notes, "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" (p. 12). The previous library orientation game for engineering students (Giles, 2015) had focused on exploring the STEM library and finding collections related to their major, but the Passport escape room needed to have broader appeal. During our planning meetings, we decided that the room would be designed as a general introduction to JMU Libraries' spaces, collections, and services. It would not focus on one subject or even one library building, but the JMU Libraries system as a whole.

Rather than try to teach students how to use the library without a research assignment to motivate them, we wanted engagement with the escape room to serve as a library orientation and reinforce any library instruction that students may have already received. Existing familiarity with, for instance, the Library of Congress Classification (LCC) System might help a player to solve a call number-based puzzle more quickly, but clues would be designed to provide all necessary information to players. Our intent was that, no matter what level of experience with the university's library system a player had, they would find the puzzles challenging but solvable.

Drawing upon our experience as reference and instruction librarians, we developed a list of information about JMU Libraries that first-year students would need to know to be successful in their future library research. We selected the following facts as the basis of our puzzle design:

- The campus has four libraries covering different subject areas.
- Books are organized using LCC, not the Dewey Decimal System.
- The first letter of an LCC call number indicates the subject of the book.
- The number at the end of the LCC call number is the publication year of the book.
- Interlibrary Loan is a service that borrows materials from other libraries.
- JMU Libraries' collection goes beyond books, and includes a variety of other learning objects such as anatomical models.
- Research guides on the JMU Libraries website contain subject-specific resources.
- Students can meet one-on-one with liaison librarians for research consultations.

Theme

Early in the development of the escape room, the team discussed ideas for a theme or narrative. An escape room does not necessarily need a storyline, but we wanted players to at least have a clearly understood goal. Since the library escape room would be offered as a way for students to fulfill a requirement for their HTH 100 class, we expected that some attendees would have no prior familiarity with escape rooms. They might register for the session simply because it fit their schedule. We did not want these escape room novices to feel confused about their immediate objective.

As the name suggests, most escape rooms present players with a scenario in which they are trapped in a room and must escape. Nicholson (2015b) found that about 70% of commercial escape rooms use this basic premise, with about 30% specifically using an unpleasant place such as a dungeon as the setting. Narratives such as "you're trapped in the library after closing" or "someone locked the door of your group study room" were obvious possibilities, but for safety reasons we did not want to actually lock students inside a small room. Nicholson (2015b) also notes that "the concept of having to escape evokes a horror theme that may not make everyone comfortable. The idea of being locked in a room and having to escape is exciting for some, but will drive others away" (p. 28). Because we planned to have a facilitator remain in the escape room during the event, a "trapped in the library" narrative would also have required us to invent an explanation for the facilitator's presence and why they could not free the students themselves.

We considered instead presenting players with a crime or supernatural mystery to solve. Such themes are common in commercial escape rooms (Nicholson, 2015b) and likely would have been appealing to some players. Davis (2019) describes a mystery-themed library game at John Jay College of Criminal Justice that was inspired by a historic murder case and made use of a trial transcript and other materials from their Special Collections. This is a good example of a game with a theme that suits both the interests of students and the library's collections. However, for our escape room a violent or spooky theme seemed at odds with the wellness emphasis of the HTH 100 course and might have been off-putting for some students. Based on the lead author's experience running a mystery-themed library orientation game (Giles, 2015) and the literature on escape rooms (Nicholson, 2016), we were also concerned about potentially distracting players from the learning objectives with an unrelated narrative or frustrating them with educational puzzles that were unrelated to the theme. Developing an elaborate backstory ultimately seemed like more trouble than it was worth. A simple, library-focused narrative

would allow the escape room team to concentrate on creating good puzzles and make it easier to include educational information without violating players' suspension of disbelief.

Fortunately, the nature of Passport events provided us with a straightforward objective for players. Their real-world motive for attending would be to fulfill a course requirement by collecting a Passport stamp, so the goal of the escape room would be to find the stamp. Escape room facilitators would explain at the beginning of the session that they were covering for the librarian who usually organized the Passport events. When the facilitator went to get the Passport stamp from the absent librarian's office, they found several locked containers and a note indicating that the stamp had been hidden as a challenge for students:

> "If you want to earn a Passport stamp
> You must become a Libraries Champ!
> Solve each of the puzzles that I have left you
> And you will learn some research skills too."

Facilitators could behave naturally during the event, answering questions about the Libraries and providing encouragement and hints when necessary. This ally role also provided balance for the somewhat mischievous absent librarian character and promoted an image of library employees as helpful to students. For escape rooms where escaping the room is not the main objective, Nicholson (2016) encourages designers "to consider why the players need to finish the game before the timer ends" (p. 9). Our narrative allowed for a plausible explanation: the facilitator only had an hour before they would need to attend to other duties and could not leave students to search the librarian's office unsupervised.

Puzzles and Props

Since most puzzles in an escape room involve manipulating physical objects, puzzle development goes hand-in-hand with collecting props. A benefit of our simple narrative was that many of the props could be obtained from the library supply closet and university surplus. The escape room was held in a small conference room with a desk, table, and seven chairs. Decorating this space as an Egyptian tomb or alien spaceship would have required considerable effort and expense. Making it look convincingly like a librarian's office required only the addition of a few used office supplies, an old telephone, a coffee pot, and a JMU mug (Figure 1).

Figure 1

Escape Room Decorated to Look Like a Librarian's Office

The locked containers that players would need to open as they searched for the Passport stamp included a cash box that had once been used to hold overdue fines, a portfolio case that one of the authors had received as swag, a cheap souvenir coin purse, and a decorative wooden box obtained from surplus. The only purchases made for the escape room were four combination locks, a set of magnetic child safety locks, a lockout hasp, a plastic toolbox, and a digital timer. These items were selected based on the recommendations found on the education blog Passionately Curious (Cossette, 2018) and cost about $70.

One of the first–and easiest–puzzles in the game required players to notice that a date stamp on the librarian's desk was set to a particular date. When converted to numeric form, this date was the combination to one of the locked boxes. Another puzzle involved a stack of books that had been salvaged from a recent weeding of the health sciences section. A clue guided players to select the correct books, turn to particular pages, and use the letters that had been highlighted there to figure out the combination to a word lock.

A special prop discovered on our trip to university surplus was an old medical manikin that had been used for practicing eye exams (Figure 2). The manikin was designed so that slides depicting the inside of the eye could be placed inside the head and viewed by shining a light into the pupils. By adding a slide with the combination for a lock written on it, we made the manikin part of a puzzle. The manikin, which we dressed in a JMU t-shirt, provided a touch of whimsy in the otherwise mundane-looking room while also promoting the library's collection of anatomical models.

Figure 2
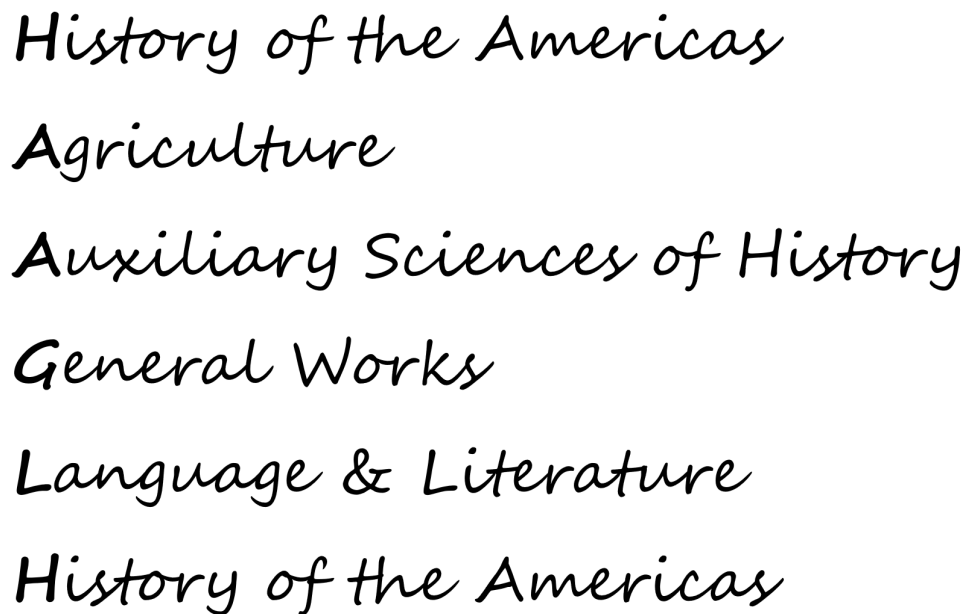
Eye Exam Medical Manikin

As much as possible, we included factual information about JMU Libraries in puzzles.

A bookmark describing campus library locations provided a clue to opening a directional lock, and a Library of Congress stacks guide helped players to decode a password (Figure 3). Other clues had to be created by our team but were designed to look like promotional materials for library services. The clue for the eye exam puzzle took the form of a flyer about our online research guides. It read, "Get ahead in school with help from JMU Libraries! Look at our research guides to stay on the right track with your assignments. Find books, databases, and more, recommended by subject librarians to help you be a good pupil." The words "Get ahead look right pupil" were printed in a different color than the other text. A stock photo of a student holding a pencil pointed toward the right side of her head added another hint that players should look into the manikin's right eye (Figure 4).

Figure 3

The Word "Escape" Encoded Using LCC Classes

History of the Americas

Agriculture

Auxiliary Sciences of History

General Works

Language & Literature

History of the Americas

Figure 4

Clue for Eye Exam Puzzle

Get ahead in school
with help from JMU Libraries!

Look at our research guides
to stay on the **right** track
with your assignments.

Find books, databases, and more,
recommended by subject librarians
to help you be a good **pupil**.

The few puzzles that did not involve library information, such as the date stamp puzzle, typically did not take long to solve. These puzzles were intended to provide players with a feeling of accomplishment and prepare them for more challenging puzzles. For example, the date stamp puzzle led to a clue about scheduling a consultation appointment with a librarian and a puzzle that involved using dates on a calendar to find a numeric lock combination.

The target length for our escape room was about 40 minutes, leaving time for introductions and debriefing at the beginning and end of each hourlong session. We developed ten puzzles, estimating that players would need 3-5 minutes on average to solve each one. Sclippa, et. al (2020) advise that escape rooms should be designed to have "as few bottlenecks as possible–that is, times when the entire group has only one puzzle to solve, cannot proceed without it and has nothing else to work on. At the same time, too many options can be overwhelming" (p. 269). Our puzzles were organized into a path-based structure, with two parallel paths of four puzzles each. The paths then converged for the last two puzzles (Figure 5). According to Nicholson (2015b):

> The advantage to this structure is that different members of a team can work on different puzzle paths at the same time, but by presenting a subset of puzzles, the designer can start with simpler puzzles and then move into more difficult puzzles as the players grow in confidence and familiarity. (p. 17)

Figure 5

Path-Based Puzzle Structure
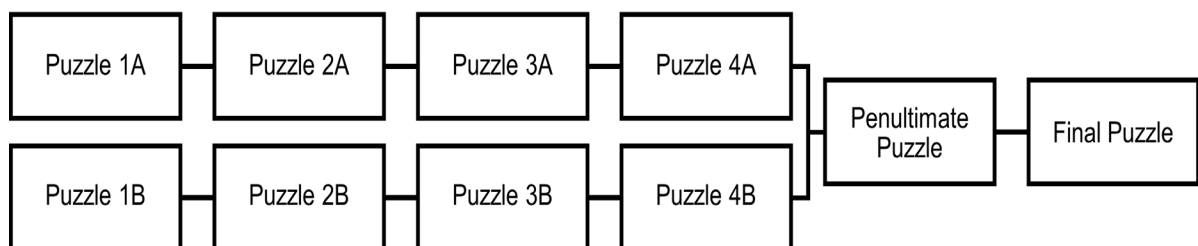
While working their way through the two paths, players also collected pieces of a wooden jigsaw puzzle featuring the Zora Neale Hurston (1942/2006) quote, "Research is formalized curiosity. It is poking and prying with a purpose" (p. 143). Some pieces were hidden around the room and others were inside the containers that had to be unlocked during the game. By combining clues from the end of each path, players opened the penultimate container and revealed the final jigsaw puzzle piece. This piece had a small magnet glued to it.

The last unopened container in the escape room was a wooden box that matched the jigsaw puzzle. A magnetic safety lock inside the lid kept the box sealed closed. Assembling the

jigsaw puzzle on the lid of the box aligned the magnetic puzzle piece with the lock, allowing players to open the box and retrieve the Passport stamp. In addition to being the key to opening the final box, the jigsaw puzzle gave players a way to track their progress based on how many pieces they had already found. The jigsaw puzzle and box were created by a member of our team using the carving machine in the JMU Libraries Makery. For libraries without access to such equipment, writing a clue to a combination lock on a blank jigsaw puzzle would be a low-cost way to achieve a similar effect.

Playtesting

To ensure that the puzzles made sense and could be solved in a reasonable amount of time, we held three playtesting sessions. For the first two sessions, we informally recruited other employees. Members of the Libraries' Student Advisory Board participated in the third playtesting session. As playtesters worked to solve the puzzles in the room, members of the design team observed, took notes, and provided hints as requested. At the end of each session, the design team members led a discussion to gather feedback. The Student Advisory Board members were also asked to fill out a short comment form. See discussion questions in Appendix A.

All three playtesting groups finished the room within the intended time period of 30-45 minutes. This indicated that the difficulty of the puzzles fell within the "sweet spot" of challenging yet achievable. The playtesters obviously enjoyed the activity, and there was a sense of celebration in the air during the discussion sessions after each victory.

Comments during these sessions and from the forms collected from the Student Advisory Board members praised the variety of puzzle types, the connected nature of the puzzles, and the level of challenge. While most of the playtesters did not have any critical feedback, a few noted that having props in the room that were unconnected to the puzzles was a bit confusing. Others remarked that students who were not familiar with escape rooms might not know what to do. To rectify this, they suggested that a clear starting point would be helpful. Overall, playtesters were pleased by how fun the escape room was, with a few suggesting that including more puzzles would make it even better.

Implementation

The library escape room was offered as a Passport event on four dates in the fall of 2019. Students registered in advance, with a maximum of six allowed per session. One session had only a single attendee, with other sessions attended by five or six students each. All players, including the solo player, successfully completed the escape room in 30-45 minutes, although some needed more assistance from the facilitators than others.

No hints were available for the first 10 minutes of the escape room, but after that point players could ask for help. Our intent was that all students who made a reasonable effort should be able to complete the room in the allotted time, so after the first 10 minutes facilitators could use their judgment and intervene if players became stuck. Specific hints were not offered unless requested, but facilitators could say that an object didn't seem important or suggest looking around the room for more clues. Facilitators could also assist with opening locks after players had figured out the correct combination.

At the end of each session, facilitators led a 10- to 15-minute group discussion where they asked players to reflect upon what the activity had taught them about JMU Libraries and the skills needed to conduct library research. (See discussion questions in Appendix B.) We did not conduct a formal survey of players, but these debriefing sessions provided them with an opportunity to give feedback on the escape room.

More sessions were planned for late spring 2020, but all in-person activities were cancelled due to the Covid-19 pandemic. A shortened version of the escape room was presented as an optional orientation event for first-year students on two dates in September 2022. We hope to offer the full-length escape room as a Passport event later in the 2022-2023 academic year.

Discussion

While the total time needed to beat the escape room was similar for each session, the amount of time spent on a particular puzzle could vary considerably. A puzzle that took one group just two minutes to solve might stump another group for 10 minutes or more. Including a mix of different types of puzzles seems important both to appeal to different tastes and to keep the activity a roughly consistent length for groups with different puzzle-solving strengths.

The parallel path structure worked well for our escape room, although a single-path sequential structure might be better for shorter events. Some of the groups who participated in our escape room found both starting puzzles early on, while others completed one path before even noticing the starting puzzle for the other path. When this happened, players could become briefly confused or frustrated because it seemed as though they had reached a dead end. Several suggested that the escape room could be improved by having a single obvious starting point, although our observations indicate that what is "obvious" to one group can be overlooked by another.

Unlimited hints were available to players after the first 10 minutes, but most students preferred to solve the puzzles themselves. They rarely asked the facilitators for help unless they thought that a lock or prop wasn't working properly. In most cases, these players had not yet figured out the correct solution, but in one session a lock had been set to the wrong combination by mistake.

Rather than providing explicit hints, facilitators more often had to redirect players who were pursuing an unproductive strategy. The advice about players creating their own red herrings held true with our escape room. Perhaps because most of the props were ordinary objects that might be found in an office, players sometimes overlooked crucial items or spent time examining unimportant objects for clues. Some players tried dialing numbers into the old, disconnected prop phone in the room. One player had to be assured that an empty stapler held no secrets. Another player guessed that the combination to one lock must be hidden in the fine print on a box of tea that held clues for one puzzle, and tried the expiration year and the last four digits of the customer service number before the facilitator encouraged her to take another look at the documents on the table.

Facilitators also sometimes provided a form of assistance that we had not anticipated: encouraging communication among members of the group. Unlike in our playtesting sessions, the student players often had not met one another before the escape room. Some students quickly began working together as a team, while others had more trouble effectively sharing information. During one session, a player devoted himself to solving a particular puzzle that had stymied other members of the group. He eventually figured it out and opened the associated locked box to reveal a clue, but did not announce this. The other players did not check back on his progress, and soon reached a dead end because they did not have the necessary clue. The facilitator had to prompt the player to share the clue so the group could move on. These kinds

of experiences can be a valuable part of the escape room. Player feedback indicated that several of them saw the escape room as teaching information about the library and teamwork and communication skills.

During the debriefing conversations, students consistently described the event as fun and said that it taught them about the collections and services offered by the different campus libraries, as well as creative thinking, teamwork, and problem-solving skills. Suggestions for improvement were rare and mostly focused on issues with props, such as the lock that was set to the wrong combination, or the room itself, which was small and did not allow larger groups much space to move around.

When asked what was the best part of the escape room, most players did not name a specific puzzle but instead said that they enjoyed figuring out the clues, finding the final jigsaw puzzle piece, or simply "winning!" The thrill of victory–and Passport credit–were reward enough for most players, although one of the groups who participated in the first-year orientation escape room said they would have liked getting library t-shirts as a prize. Many of the first-year orientation players also said they appreciated the opportunity to meet new people and make friends. This included two players who weren't actually first-year students. One of the 2022 sessions was attended by a senior and graduate student who were looking for something fun to do on campus that weekend. After successfully completing the escape room, we observed them exchanging social media information with the three first-years in their group–students who they probably never would have met otherwise.

Conclusion and Recommendations

After multiple successful runs of the escape room and debriefing discussions after each event, we have some recommendations for improving future iterations of the JMU Libraries escape room and implementing escape rooms at other institutions. First, bear in mind Nicholson's (2016) advice:

> a designer should look at each element of the player experience of an escape room and ask "Why is this here?" Each puzzle, task, and item in the escape room should be there for a reason that is consistent with the overall concepts behind the design of the room. (p. 4).

Keep an eye out for unintentional red herrings or confusing props. While figuring things out is part of the fun of an escape room, if players are repeatedly confused by the same prop or clue then it may need to be removed, revised, or incorporated into a new puzzle.

We also encourage escape room designers and facilitators to be prepared for problems with props. Players can be ingenious when it comes to finding ways to peek inside containers, force them open, or shake clues loose. Folding clues or placing them inside envelopes will help prevent players from obtaining information too soon, or at least give the facilitator time to intervene. A detailed list of items, including the combinations for all locks, will make it easier for facilitators to keep track of everything during setup and cleanup. However, it is likely that something will eventually be lost or damaged–and this may not be discovered until the room is being set up for a session. Extra copies of clues are essential, and (if budget permits) purchasing extra locks and containers will allow for last-minute replacements. Improvisation may be necessary. For instance, if a box is missing then the appropriate lock could be set out with a note saying that once players figure out the correct combination, they can show the open lock to the facilitator to collect the next clue.

Our final recommendation is to utilize formalized assessments. A feedback survey or pre- and post-assessment of student familiarity with JMU Libraries' resources and services would provide better evidence of the effectiveness of the escape room. Thus far, we have relied on immediate feedback from the participants. The comments from players and our own observations of the sessions indicate that it was an enjoyable and educational library orientation activity, but we hope to include a more formal assessment in future iterations of the escape room.

Developing an escape room takes a significant amount of work, but we found it to be well worth the effort. We encourage other librarians who are looking for engaging library orientation activities to consider escape rooms. As we have shown, expensive props and elaborate narratives are not necessary to create a successful escape room. Solving puzzles is a large part of what makes escape rooms fun and is also central to the learning experience. The existing literature as well as commercial escape rooms and other games can provide inspiration for well-designed puzzles that will capture the interest of students while teaching them about the library.

Acknowledgements

References

Chaudhry, A. (2020, July 15). Librarians turned Google Forms into the unlikely platform for virtual escape rooms. *The Verge.* https://www.theverge.com/2020/7/15/21324558/google-forms-virtual-escape-rooms-librarians-games-puzzles-homeschooling.

Cossette, J. (2018, January 12). Build your own breakout kits. *Passionately Curious.* http://passionatelycurioussci.weebly.com/1/post/2018/01/build-your-own-breakout-kits.html.

Davis, R. C. (2019). Introducing first-year and transfer students to a college library with a historical mystery from the special collections. *College & Undergraduate Libraries*, *26*(4), 278–300. https://doi.org/10.1080/10691316.2019.1695034.

Fountaine, L. (2020). Breaking out of the ordinary: Using BreakoutEDU and escape rooms in the academic library. In S. Crowe & E. Sclippa (Eds.), *Games and Gamification in Academic Libraries* (pp. 177–189). Association of College & Research Libraries (ACRL).

Framework for information literacy for higher education. (2015, February 9). Association of College & Research Libraries (ACRL). https://www.ala.org/acrl/standards/ilframework.

Giles, K. (2015). No budget, no experience, no problem: Creating a library orientation game for freshman engineering majors. *The Journal of Academic Librarianship*, *41*(2), 170–177. https://doi.org/10.1016/j.acalib.2014.12.005.

Giles, K., Shuyler, K., Evans, A., & Reed, J. (2019). Creating a library orientation card game to reach new transfer students. *Public Services Quarterly*, *15*(1), 1–12. https://doi.org/10.1080/15228959.2018.1488643.

Herther, N. K. (2022). Escape rooms for education, library instruction, and problem solving. *Online Searcher*, *46*(2), 15–18.

Hurston, Z. N. (2006). *Dust tracks on a road: An autobiography*. Harper Collins. (Original work published 1942)

James Madison University Department of Health Sciences. (2023, January 13). *HTH 100 Personal Wellness*. https://wellness.cisat.jmu.edu/.

Koelling, G., & Russo, A. (2020). The Mystery Room: Discovering the flexibility of an information literacy-based educational escape room. *Public Services Quarterly*, *16*(1), 1–11. https://doi.org/10.1080/15228959.2019.1666779.

Kretz, C., Payne, C., & Reijerkerk, D. (2021). Study room time machine: Creating a virtual library escape game during COVID. *College & Undergraduate Libraries*, *28*(3-4), 273–295. https://doi.org/10.1080/10691316.2021.1975341.

Kroski, E. (2020). How to create free digital breakouts for libraries. *Library Technology Reports*, *56*(3), 5–31. https://doi.org/10.5860/ltr.56n3.

Mayer, B., & Toates, L. (2016). Great escapes. *School Library Journal*, *62*(10), 14–15.

McNabb, T. (2017, August 7). Red herrings and escape rooms. *Gateway Escape Rooms*. https://gatewayescaperooms.com/red-herrings-escape-rooms/.

Nicholson, S. (2015a). Applying escape room game concepts to informal learning: Operation Sabotage Stanwix! *GLS 11.0 Conference Proceedings*. Games+Learning+Society 11, Madison, WI. https://doi.org/10.1184/R1/6686777.

Nicholson, S. (2015b). *Peeking behind the locked door: A survey of escape room facilities*. https://scottnicholson.com/pubs/erfacwhite.pdf.

Nicholson, S. (2016). *Ask why: Creating a better player experience through environmental storytelling and consistency in escape room design*. Meaningful Play 2016, East Lansing, MI. https://scottnicholson.com/pubs/askwhy.pdf.

O'Reilly, K. (2016). Libraries on lockdown. *American Libraries*, *47*(9/10), 14–17.

Pate, J., & Malone, D. (2018). Beyond reinventing the library scavenger hunt: Teaching library literacy to FYE students using an escape room. *LOEX Quarterly*, *44*(4). https://commons.emich.edu/loexquarterly/vol44/iss4/4.

Reade, T. (2017). The clock is ticking. *Knowledge Quest*, *45*(5), 48–53.

Schubert, C., Willey, M., Young, A., & Kaufman, A. (2022, January). PRIMO Site of the Month interview, January 2022: What's behind a web search? Bias and algorithms. *ACRL's Instruction Section*. https://acrl.ala.org/IS/instruction-tools-resources-2/pedagogy/primo-peer-reviewed-instruction-materials-online/primo-site-of-the-month/primo-site-of-the-month-interview-january-2022/.

Sclippa, E., Baugnon, R., Crowe, S., Fleming, J., & Fritzler, P. (2020). Dewey decimated!: Creating an immersive escape room from beginning to end. In S. Crowe & E. Sclippa (Eds.), *Games and Gamification in Academic Libraries* (pp. 265–308). Association of College & Research Libraries (ACRL).

Sewell, A. (2021). Creating a choose-your-own-adventure library orientation: The process of using a text-based, interactive storytelling tool to take your orientation virtual. *Journal of New Librarianship*, *6*(1), 23–32. https://doi.org/10.33011/newlibs/10/3.

Shuyler, K. (2022). "Make it more fun": Residence life employees' insights on hosting and advertising outreach programs for undergraduate students. *Journal of Library Outreach and Engagement*, *2*(1), 82–96. https://doi.org/10.21900/j.jloe.v2i1.874.

Spira, D. (2019, February 10). Red herrings in escape rooms [Design]. *Room Escape Artist*. http://roomescapeartist.com/2019/02/10/red-herrings/.

Stone, Z. (2016, July 28). The rise of educational escape rooms. *The Atlantic*. https://www.theatlantic.com/education/archive/2016/07/the-rise-of-educational-escape-rooms/493316/.

Thoegersen, J., & Thoegersen, R. (2016a). Library lockdown: An escape room by kids for the community. *In the Library with the Lead Pipe*. https://www.inthelibrarywiththeleadpipe.org/2016/library-lock-down/.

Thoegersen, R., & Thoegersen, J. (2016b). Pure escapism. *Library Journal*, *141*(12), 24.

Usborne, S. (2019, April 1). Get me out of here! Why escape rooms have become a global craze. *The Guardian*. https://www.theguardian.com/games/2019/apr/01/get-out-how-escape-rooms-became-a-global-craze.

Veach, C. C. (2019). Breaking out to break through: Re-imagining first-year orientations. *Reference Services Review*, *47*(4), 556–569. https://doi.org/10.1108/RSR-06-2019-0039.

Wise, H., Lowe, J., Hill, A., Barnett, L., & Barton, C. (2018). Escape the welcome cliché: Designing educational escape rooms to enhance students' learning experience. *Journal of Information Literacy*, *12*(1), 86–96. https://doi.org/10.11645/12.1.2394.

Appendix A
Playtesting Discussion Questions

- What do you think freshmen will learn about JMU Libraries from the escape room?

- What was the best part of the escape room?

- What is something you would recommend that we change about the escape room?

- Do you have any other comments about the escape room?

Appendix B

Escape Room Debriefing Questions

1. Do you have any questions about the escape room?

   Explain any clues they were unable to figure out and help them open anything that remained unopened. Remind them not to reveal the solutions to other students!

2. What was your favorite part of the room?

3. What did you learn about JMU Libraries from the escape room?

   If they missed any of the following, point out the relevant clue and ask, "What about this?" If they don't get it, you can explain.

   - JMU has four libraries, each with different subject areas.
   - Books in Carrier Library and Rose Library are organized using Library of Congress Classification, which is different from the Dewey Decimal System.
   - The first letter of an LCC call number represents a broad subject area such as science or literature.
   - Every major at JMU has a liaison librarian. You can make an appointment with this librarian to get help with your research.
   - There are online research guides for different subjects that are created by the liaison librarians.
   - JMU Libraries can borrow books and articles from other libraries through Interlibrary Loan.
   - Anatomical models are available in Carrier Library and Rose Library.

4. What skills and knowledge are needed to beat the room?

5. Playing an escape room and doing library research have more in common than you might think. You're trying to find the information you need to complete a task before you run out of time! What escape room skills are similar to library research skills?

   Bring up any of the following that they missed.

   - Identify the problem to be solved or question to be answered.
   - Break a complicated problem down into simpler steps.
   - Distinguish between important and unimportant information.
   - Analyze the available information and come to a reasonable conclusion.

- Be persistent–don't give up when things seem hard.
- Learn from your mistakes. Don't keep doing the same thing if it isn't working. Try a different approach.
- Ask for appropriate help from an expert when you need it.

6. Do you have any suggestions for improving the escape room?