2-21-2020

The Mystery Room: Discovering the flexibility of an information literacy-based educational escape room

Glenn Koelling

Alyssa Russo

The Mystery Room: Discovering the flexibility of an information literacy-based educational escape room

Glenn Koelling & Alyssa Russo

University Libraries, University of New Mexico, Albuquerque, United States

Address correspondence to Glenn Koelling, Centennial Library, MSC05 3020, 1 University of New Mexico, Albuquerque, NM 87131. Email: gkoelling@unm.edu

This work was supported by the New Mexico Library Foundation under Grant dated June 6, 2018.

The Mystery Room is an educational escape room based on information literacy and applied to multiple audiences, including first-year students and library student employees. In this article, we explain how we developed the game, its theoretical underpinnings, and why it's a flexible workshop for a variety of audiences.

Keywords: information literacy, educational escape room, information formats, gamification, student employees, first-year students

Building trust and fostering engagement with undergraduate students as a guest speaker in a single instruction session can be challenging. Many librarians have encountered student resistance to traditional library instruction. These attitudes are not well documented in library literature; however, research has shown that students perceive using the library as an inconvenience, and worse, may have feelings of discomfort and intimidation (Colón-Aguirre & Fleming-May, 2012). In order to mitigate such feelings, instruction librarians at the University of New Mexico (UNM) make efforts to develop approachable learning experiences for students. To complement regular library instruction, the libraries offer innovative workshops that may upend student expectations. Such was the case in the summer of 2018 when we developed the Mystery Room – an educational escape room rooted in information literacy. Escape rooms are commercial games where players are "locked" in a room and must solve puzzles and find clues to "escape." Educational escape rooms are similar but incorporate learning outcomes into the game. We saw the success of similar initiatives and wanted to push the genre forward by basing our escape room in conceptual information literacy and tailoring it to our unique student population. In this article, we explain how we developed the Mystery Room, its theoretical underpinnings, and its flexibility for a wide variety of audiences.

Situated in Albuquerque, New Mexico, UNM is a diverse school. It is a Carnegie classified R1 university with a student population of just over 22,000 (UNM Office of Institutional Analytics [UNM OIA], 2019). It is also a Hispanic Serving Institution, one of the few R1 schools to be so designated. New Mexico is home to 23 Native tribes, and about 5% of the UNM student body is Native (New Mexico Indian Affairs Department, n.d.; UNM OIA, 2019). Additionally, almost 44% of UNM undergraduates are first generation (UNM OIA, personal communication, June 24, 2019). In short, UNM is a school that is diverse in many ways. In order to support such a variety of students, the University Libraries (UL) at

UNM work to identify and meet student needs via a range of outreach and instruction. In addition to teaching one-shot sessions and credit courses, the UL offers outreach programming including pop-up libraries, satellite reference hours, and workshops. It was in this context we developed the Mystery Room.

Game-based Information Literacy

The Mystery Room centers information literacy in gameplay. Educational escape rooms have been used in higher education to teach pharmacy and nursing students about healthcare concepts (Cain, 2019; Eukel, Frenzel, & Cernusca, 2017; Gómez-Urquiza, Gómez-Salgado, Albendín-García, Correa-Rodríguez, González-Jiménez, & Cañadas-De la Fuente, 2019). Academic librarians have employed escape rooms as part of orientation and outreach programming, welcoming students to the library by familiarizing them with services and resources (Gregor, 2019; Shostack, 2019; Wise, Lowe, Hill, Barnett, & Barton, 2018). Pun (2017) and Sundsbø (2019) showed how library escape rooms can introduce sophisticated concepts such as fact-checking and open access.

Pun (2017) urged readers to consider using the Association of College and Research Libraries (ACRL) Framework in their escape rooms (p. 335). In Sundsbø's (2019) article, she reflected on potential ways to adapt her escape room for other audiences (p. 6). In our escape room, we attempted to do both while providing a warm welcome to the library. Reflecting on the ACRL Frame of "information creation as a process", the Mystery Room specifically uses the threshold concept of information formats to introduce students to common formats found in the library, highlighting distinctions between them as a pathway for making sense of when and why to use them (Association of College and Research Libraries, 2015; Hofer, Lin Hanick, & Townsend, 2019). At the same time, we designed the game to be adapted for different audiences.

The Situation

In our experience, early undergraduate students' ability to identify information formats for research assignments is a sticking point. One thread of this confusion may connect to the list of source requirements students typically receive in their research assignment prompts (3 scholarly articles, 1 book, 1 magazine, etc.). Other than citing credibility, many of these assignments do not further contextualize why certain types of information are required. This may make source requirement lists feel cryptic and overwhelming, especially for early undergraduates. Not only do students need to find the minimum number of sources, but they need to identify and make sense of some potentially unfamiliar formats, specifically with regard to scholarly information, which many first-year students do not have experience using. Margolin and Hayden (2015) questioned the scholarly source requirement asking, "Why do so many [first-year composition] instructors require so many scholarly sources when it's clear that many are inaccessible to students outside particular disciplines?" (p. 608). In other words, why are we expecting novice students to understand scholarly sources when those sources are written for experts? Without more context and experience, students may frame the goal more in terms of checking off requirements rather than seeing how different sources fit their research needs.

The technology that delivers information adds another layer of complexity to identifying information formats. Students do their research online where most digital information looks the same because of the conventions and constraints of accessing information through a web browser. Hofer et al. (2019) discussed this challenge while reinforcing concerns about disciplinary formats explaining how, "the beginner is not familiar with the common formats in a particular discipline and may not even be able to spot formats with which they are familiar in one medium if that medium shifts (print to digital, textual to audio)" (p. 83). This matches our experiences working with students who have no problem

identifying a print book, but may not know whether they found a journal article or a book chapter when searching the library website. Disconnected source requirements, disciplinary inaccessibility, and the fluid nature of information complicate what might seem like a simple task of selecting appropriate sources for a research assignment.

Information Formats

The Mystery Room aims to help students recognize four different information formats commonly used in undergraduate research: newspapers, magazines, scholarly books, and scholarly journals. Hofer et al. (2019) defined the threshold concept of information formats:

> Each instance of a format shares a common intellectual and physical structure with others like it, and is intentionally produced to support or effect action. Intellectual structure refers to the textual and visual content of a format. Physical structure refers to the organization, design, and medium of a format. These categories are not strict and may overlap. (p. 82)

There are countless examples of information formats, including scholarly journal articles and news articles as well as receipts, parking tickets, Tweets, restaurant menus, prescriptions, and so on. Each of these examples meet the criteria laid out in the definition above. All receipts, for example, share the same intellectual structure. Within the contents of any receipt we expect to find a business name, an invoice number, the products sold, a payment method, and a price breakdown. The physical structure of receipts includes the unique formatting of the information, such as the columns of information about the price breakdown. Put together, these structures communicate the other key element in the definition above: Information formats support or effect action. If we glance at a receipt, we know something was purchased. Even without knowing the details of any given piece of information, familiarity with a format helps us categorize and make sense of information. Rather than relying on relevance rankings in Google as a primary way for selecting information, students may be

able to reframe finding appropriate sources in terms of narrowing down their choices by formats appropriate to their need.

An understanding of information formats may help students select information more deliberately. In one sense, students may gain confidence with familiar formats by naming what an information thing is and what it does in order to effectively use it. In another sense, students might approach unfamiliar formats by questioning the purpose, process, and product. A nuanced understanding of format requires extended practice, and the Mystery Room offers exposure to this concept as a starting point.

The Workshop

Design

Unlike commercial escape rooms intentionally designed to be difficult to escape within the allotted time, the Mystery Room was designed for students to win every time. We wanted students to get the satisfaction of solving the caper while building positive relationships with their peers and the library. Pre-game and post-game discussions clarified and reinforced the underlying information literacy concept. This approach informed many of our decisions in constructing a well-paced game with enough happening at any given moment so that up to twelve participants could be working on something, and with enough conceptual content so that, amid the joyful chaos, students had an introduction to both information formats and the library.

In the initial planning stages we considered our physical space limitations and collected a variety of discarded library materials, a technique used by other librarians (Gregor, 2019; Wise et al., 2018; Sundsbø, 2019). We received a grant of $354 from the New Mexico Library Foundation to purchase props. To highlight lesser known library spaces on campus, we hosted the game in a smaller branch and incorporated a unique map room.

Breaking out of the computer lab space conventions of traditional library instruction provided an outreach opportunity by connecting students to library spaces.

Working backward from the learning outcome, the scenario, and the available props provided helpful boundaries to the challenge of creating puzzles from scratch. Once we created all of our puzzles, we tested each other's work and revised as needed. We observed early on some stations were more challenging than others, and we wanted students to finish the stations at roughly the same time. During this process we fleshed out the story and figured out transitions in gameplay.

Warm Up Activity

In the Mystery Room, we introduced the concept of information formats in a warm-up activity that explains three aspects, or the Three Ps, of information formats. First is the purpose, or why the information exists and who made it. Second is the process of how the information is created, both intellectually and physically, including quality control processes. Third is the product, or what typifies the information's final form so that we recognize it (Hofer et al., 2019, p. 83). None of the Three Ps are checklist criteria, yet they provide guidance for students to investigate information with a focus on the communicative purpose and process of information. In the Mystery Room warm up, we briefly show the students an image of a receipt, and then ask some questions about the Three Ps. Using a familiar format allows for a quick introduction to the big ideas and gives students a framework for the rest of the workshop. We wove the Three Ps into the design of the puzzles, and during the post-game discussion, students reflected on and shared about a format they focused on during gameplay.

The Game

After the warm up activity it was time to play the game. As facilitators, we briefly informed students of the game scenario before jumping in. Universities are complicated systems, so to unpack some of that complexity, the game's scenario sheds light on UNM as a research institution. The game references aspects of scholarship including the roles and activities scholars perform, power imbalances, and a heavy dose of academic dishonesty. The storyline centers on Dr. Letitia Jones, an academic whose ground-breaking manuscript was stolen by her scholastic nemesis, Chad Wayne Lewis. Mystery Room participants play the role of Dr. Jones's trusted students who must work together to solve a series of taunting clues left behind by Lewis that point to the missing manuscript and his secret location. While full of drama, part of the strategy in crafting this particular narrative was to familiarize students with the function of a research university. Students may not realize their professors conduct research in addition to teaching. We enjoyed small moments that demonstrated students' curiosity about research institutions. For example, while breaking down the workshop one time, we noticed a laptop left open with the definition of "sabbatical" on the screen, clearly an unfamiliar term which we had used during gameplay.

Once participants knew the scenario, we divided them up into small groups. We wanted participants to work together cooperatively, but to keep everyone engaged, students split into smaller groups before eventually joining back together to complete the game. Each information format had a dedicated station, and for simplicity's sake, each station contained two clues to find: a color clue and a number clue. Only when all the stations' numbers and colors were put together in the right order could the students solve the mystery. Using the newspaper station as an example of developing a puzzle, it made sense to create a crossword puzzle since it contains both common intellectual and physical structures that readers expect from newspapers. Students used a newspaper database to solve the crossword hints. The hints

were titles to newspaper articles, and once students found them through the database they needed to determine the article's newspaper section (opinions, sports, obituaries, etc.) to fill in the crossword. Instructions about unscrambling the crossword led to the color clue. In the scholarly book station, we hollowed out a book and hid keys in it. Participants had to find which key unlocked a chest, and in that chest was a tool to decipher a code. This code was hidden on a bookmark with an incomplete citation to a book. The unscrambled code revealed the author's name, and participants used this citation and the library catalog to find the title of a book which revealed the color clue. Each station had multiple puzzles, like these examples, to engage the whole group.

When each station had found their two clues, we came back together as a large group to solve one more puzzle. We prompted transitions in the game by having a slide deck on the room's large monitor with incoming messages from Dr. Jones. By using a remote control slide clicker, we could advance a surprise message, complete with a buzzing sound effect to get attention. These slides gave participants their next task: find a last clue. We hid posters around the room announcing a talk by Dr. Jones. Through a series of misspelled words, these posters indicated where participants had to go next and what they were looking for. Solving the poster puzzle led students to the map room, where the group would find a single map laid out on a table with a hint about how to order and use the numbers and colors from each station to find the villain's coordinates on a map. While some students worked on the latitude and longitude coordinates, the rest spread out around the map room to locate the manuscript in a hidden briefcase. Having completed both tasks, the game was complete, and everyone headed back to the original classroom to debrief and wrap up the workshop.

Wrap-Up

After the game portion of this workshop, a volunteer would recap the story of what happened in the game. Students then regrouped at their format stations and completed a worksheet

template representing their station's format. These worksheets looked like a stereotypical format but with blank spaces for the group to fill in. For example, the scholarly journal template had a blank space for a journal title, article title, abstract, and so on. Focusing on the purpose, process, and product of their format, the group outlined how the story of what happened in the Mystery Room would be appropriately communicated through their station's format. What structural elements, both intellectual and physical, would students expect to see in their format's telling of the story?

This portion of the workshop provided useful assessment for us to determine participant understanding of format features. It often challenged students, and the work we collected reflected a variety of understandings. In some cases, templates were scarcely filled, and it's difficult to know if the group was running out of energy by the end or if they were confused. Yet, there were several earnest attempts. Using the scholarly journal article format as an example, one template included an article title, "Newly Discovered Gene May Determine Likelihood of Malevolence." In another instance, a group outlined the major sections in a scholarly article and included a bar graph labeled "Things that were Stolen" that compared the theft of research papers and car keys. Students' ability to inject humor into discrete characteristics of their format indicated a reasonable level of introductory familiarity.

Discussion

Diverging from Expectations

When participants played the Mystery Room, they had to sit in discomfort for a while. Not only did most of the participants not know us or our role in the library, but they had never experienced a workshop like this. Just hearing "The Mystery Room" was probably enough to put their guards up. A nice visual representation of this suspicion came at the beginning of every workshop. As we gathered outside the meeting room, participants kept their distance

from us – forming a semi-circle five to six feet away. Even the groups of our colleagues felt guarded to us as they waited for the workshop explanation. We tried to mitigate the awkwardness by chatting beforehand. In addition to small talk, with student employees, we asked about their jobs in the library and how long they'd been working there. Even then, we had to ask almost every group to move closer so they wouldn't block traffic. Once we moved into the meeting room, participants still hovered near the back wall – as far away from us as they could get.

We get it though. They Mystery Room breaks from expectations of what library instruction is for students. Students must suspend their notions of library instruction. At no point did we go through a database tour or talk about using the library website. Instead, participants grappled with puzzles and engaged in problem solving around the complex concept of information format. We did not ask them about their research projects or have them to do traditional research. Instead, we played a game. Playing a game often means there will be a winner and a loser, which could well be another point of anticipatory pressure.

Yet, participants relax once they had tasks at hand – in other words, once they started to play. Mystery Room participants worked together, which meant everyone won or lost as a group. Of course, we designed it so there were only winners, but we didn't tell them that. As participants relaxed into the game, barriers between us and the participants broke down. Their wins became our wins. The gratification of getting a clue was palpable. In some cases, the space turned into a buzz of excitement. Other times it was a focused silence with occasional outbursts. By the end of the workshop, there was no more tension. We had won their trust.

Audiences

We designed this workshop with first-year students in mind, and in order to support student persistence, we wanted to get students to the library, comfortable talking with librarians. Soria, Fransen, and Nackerud (2014) showed a correlation with library interactions and

student success, and as a library, we want to have a positive presence in our students' lives from the beginning. An educational escape room would provide students a fun, low-stakes interaction with the library, and be a good addition to our workshop offerings.

While the content was appropriate for first-year students, we originally envisioned this workshop to be offered for anyone who wanted to sign up. In practice, however, we cancelled all our open Mystery Rooms due to low enrollment. We had trouble getting any audience, much less a first-year one. So we turned to groups with whom we already had connections.

As we tried to find a home for this workshop -- and fine tune it -- we ran it for a variety of groups. These included first-year core writing classes, college transition classes, library student employees, writing tutors, and our library colleagues. Each group had a tailored opening and closing activity, but the game itself remained the same. What fascinated us about this workshop was how flexible it was for different audiences. The appeal to a range of audiences was also something Wise et al. (2018) noticed when more advanced students voluntarily signed up for their orientation escape room. Each iteration of our workshop was successful in its own way, but when we compared how different audiences responded, we saw how accommodating this workshop was. This flexibility means we can get more mileage out of this workshop by only adjusting the opening and closing activities based on audience.

Generally, students in the first-year core writing classes and the college transition classes who did the Mystery Room were freshmen. The library student employees were a range of new employees to experienced employees. The writing tutors were graduate students, and our colleagues all had plenty of professional library experience. Each of these groups successfully completed the game and took about the same amount of time. Despite the broad range of audiences, these groups have a lot in common. For example, as facilitators of the game, we worked to gain the trust of each group as they found out what we were asking

of them; this was true even of our colleagues with whom we have a good working relationship. The groups had no idea what to expect, even after we explained the game. Perhaps this was an indicator of anxiety about how they would perform.

The biggest difference was that more experienced groups were more comfortable once they started working on the puzzles. This makes sense – in regards to format, more experience in school usually means more familiarity with these academic formats. One senior student employee specifically cited our colleague's workshop on reading scholarly journals as being helpful in solving clues at the scholarly journals station. The writing tutors worked better as a group than the early career students did. They immediately split up tasks so not everyone was focused on the same puzzle, which most of the first-year groups did not do. The writing tutors were also more comfortable asking us questions and talking to each other.

First-year students, however, stood out in terms of enthusiasm. Many of them played the game with vigor, even running to find clues. For this audience, it was more about willingness to play the game than experience with formats. This makes sense as more experienced participants had frames of reference for the different formats that first-year students just didn't have yet. So when more experienced participants saw the scholarly journal station, they already knew what to expect from this particular format. This difference of experience meant that in some cases, first-year students found puzzle loopholes because they were not as familiar with the format. In this case, the first-year students seemed to find it easier to flip through the pages of every single journal article rather than suss out the correct section order designed to give them the clue. The more experienced participants, however, recognized the journal sections and could more easily put them in their proper order.

Finally, the people who worked in the library – both our colleagues and student employees – had their own strengths that set them apart from the other groups. Our colleagues took this workshop mostly to appease their curiosity and give feedback on design,

but it was fun to see their process in solving the clues. Naturally, our colleagues were the only group to notice some books had wrong call numbers. But that only helped them identify a clue – they still had to figure out its meaning.

Student Employees

Our student employees had noticeable differences from other student groups. During their wrap-up discussion and activity, we asked how their work helped them complete the puzzles. One participant said she had no problem using the newspaper database because she had just helped a bunch of students use it for a class. Others said they knew where to go in the library. As facilitators, we shared what we noticed about the student employee group. All student employees were comfortable with the library website. We pointed out they knew what a call number was and how to find a book in the stacks. As library instructors, we know how it can be intimidating to use our website or find a book for the first time.

The focus on student employees came from a conversation with one of UNM's student employee supervisors who was interested in partnering with instruction librarians to incorporate professional development activities. UL student employees already receive excellent training, focused on the nuts and bolts of the job and customer service. The student supervisor saw room for professional development that included more information literacy. The UL has implemented the University of Iowa's (n.d.) GROW program that emphasizes transferable skills between work, the classroom, and home. The Mystery Room fit with the UL's overall student employee training while at the same time incorporating more conceptual skills.

Student employees work most closely with access services staff and faculty; the instruction and outreach librarians rarely interact more than a "hello" and wave to the front desk employees. As a result, most student workers do not know what our role is in the library until we see them (if we see them) in a class session. Working with student employees in the

Mystery Room has been a rewarding experience on all sides; we both end up knowing more about what the other does.

Now that we know the Mystery Room works well for our student employees, our goal is to formalize the process within the larger training program. We want to work with student employee supervisors to get our new student employees after they've worked in the UL for a few months. That way it's not too much at once. At the same time, this activity encourages cohort building while supporting their academic lives as students. Students will see a different side to what the UL does as a library.

Conclusion

Feeling that connection to our students at the end of the Mystery Room was gratifying. We're encouraged by the flexibility of this workshop, both in terms of audience and subject matter. The novelty of designing a game makes us want to build another one -- perhaps this time incorporating materials from the UL special collections or emphasizing outreach via a mobile workshop. This type of workshop requires time and effort, but it's worth it. The materials for the Mystery Room, including the lesson plan, flowchart, and sample puzzles can be found here: https://libguides.unm.edu/Escape

References

Association of College and Research Libraries. (2015). *Framework for information literacy for higher education*. Retrieved from http://www.ala.org/acrl/standards/ilframework

Cain, J. (2019). Exploratory implementation of a blended format escape room in a large enrollment pharmacy management class. *Currents in Pharmacy Teaching & Learning, 11*(1), 44–50. https://doi.org/10.1016/j.cptl.2018.09.010

Eukel, H. N., Frenzel, J. E., & Cernusca, D. (2017). Educational gaming for pharmacy students - design and evaluation of a diabetes-themed escape room. *American Journal of Pharmaceutical Education, 81*(7), 1–5.

Gómez-Urquiza, J. L., Gómez-Salgado, J., Albendín-García, L., Correa-Rodríguez, M., González-Jiménez, E., & Cañadas-De la Fuente, G. A. (2019). The impact on nursing students' opinions and motivation of using a "Nursing Escape Room" as a teaching game: A descriptive study. *Nurse Education Today, 72*, 73–76. doi:10.1016/j.nedt.2018.10.018

Gregor, M. M. (2018). Campus clue: Habituating students to the information search process via gaming. *Pennsylvania Libraries: Research & Practice, 6*(2), 86–92. doi:10.5195/palrap.2018.172

Hofer, A. R., Lin Hanick, S., & Townsend, L. (2019). *Transforming information literacy instruction: Threshold concepts in theory and practice*. Oxford: ABC-CLIO.

Margolin, S., & Hayden, W. (2015). Beyond Mechanics: Reframing the Pedagogy and Development of Information Literacy Teaching Tools. *The Journal of Academic Librarianship, 41*(5), 602–612.

New Mexico Indian Affairs Department. (n.d.). *New Mexico's twenty-three tribes and the Indian Affairs Department*. Retrieved June 14, 2019 from http://www.iad.state.nm.us/history.html

Pun, R. (2017). Hacking the research library: Wikipedia, Trump, and information literacy in the escape room at Fresno State. *The Library Quarterly, 87*(4), 330-336.

Shostack, P. (2019, April). *The supply box challenge: A collaboratively designed escape room event*. ACRL 2019. Cleveland, OH.

Soria, K. M., Fransen, J., & Nackerud, S. (2014). Stacks, serials, search engines, and students' success: First-year undergraduate students' library use, academic achievement, and retention. *The Journal of Academic Librarianship, 40*(1), 84-91. doi: 10.1016/j.acalib.2013.12.002

Sundsbø, K. (2019). Open access escape room: The key to OA engagement? *Insights: The UKSG Journal, 32*(1), 1-7. doi:10.1629/uksg.459

University of Iowa. (n.d.). *Iowa GROW*. Retrieved from https://vp.studentlife.uiowa.edu/priorities/grow/

UNM Office of Institutional Analytics. (2019). *The University of New Mexico spring 2019 official enrollment report Albuquerque campus*. Retrieved from https://oia.unm.edu/facts-and-figures/oer-spring-2019.pdf

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. doi:10.11645/12.1.2394