

Escape Room Games:

"Can you transform an unpleasant situation into a pleasant one?"

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Introduction

Escape rooms have grown in popularity in the past few years and this paper looks into what constitutes an escape room, their appeal, and the skills applied in playing a game. At their core, escape rooms are games in which players need to complete a series of challenges to win. Where the first generation of escape rooms focussed on difficult logic puzzles, escape rooms today have now evolved into fully immersive environments with high quality props and effects.

This paper looks at the current state of escape rooms and how players engage them. It also examines how escape rooms can be approached by players, including the skills involved in playing. This is why we look at puzzle types and paths in the design of the room for players. The theme of escape rooms can make a difference to the play experience (not all escape rooms require a physical escape), we have outlined some common themes. There are variations in the rooms that we address throughout the paper.

We want to provide a cursory look into escape rooms in hopes that it will create a discourse (and further study) around escape rooms and how they can be used. The design of escape rooms is complex and how they are played can require equally complex deconstruction. As escape rooms rise in popularity, they are being used in new areas like education and corporate training. As they expand into these areas, we want to provide a framework for understanding escape rooms.

What is an Escape Room?

In this document, an escape room is a game played by a team of people where they have to 'escape' from a room filled with challenges within a given time limit. In order to win ('escape'), the players must solve the challenges contained within the room. At the outset of the game, the challenges may be made inaccessible and must be found by completing puzzles.

The escape room genre has a number of names given to it: Escape Game, Live Escape, Puzzle Room, Live Action Game, Adventure Room/Games, and more. In some iterations of the genre, an escape is not even necessary. It may be focused solely on the experience or the challenge to solve puzzles. However the "escape room" moniker is the accepted term¹.

Why Escape Rooms?

Escape rooms are experiential at their core and appeal to players looking for a non-traditional game. They require a diverse set of skills and knowledge to play and are therefore appealing as

¹ cf. Scott Nicholson, 2015: Peeking behind the locked door: A survey of escape room facilities. White paper available @ <http://scottnicholson.com/pubs/erfacwhite.pdf>

corporate exercises for team building. Recently these games have begun to be of interest to educational institutions for the same reason.

In the gaming context, escape rooms can be traced back to (and share elements with) Live Action Role Playing and Alternate Reality Games. In the mid 00's, digital escape games rose in popularity. Escape rooms share game design issues present in other forms of play as well; from logic puzzles to physical elements found in board games, geocaching, interactive theater and even game shows. With this context in mind, it is worth considering escape rooms as both an evolution of gaming itself and a logical step within game design culture.

Escape rooms encourage players to think creatively and engage in critical thinking. Solving a puzzle and ultimately winning will require individuals to work on the puzzles using multiple approaches to knowledge. For example, one may need to work on a math problem, but then proceed to visually processing a circuit and finally end up classifying a series of objects.

Escape rooms differ with the challenges it gives to players, but each escape room encourages players to think differently, unconventionally, and from a new perspective.

What Are Escape Room Puzzles?

A common question by people who have never done an escape room is "What kind of puzzles will you find?" In order to advance and fully experience an escape room, the team must complete the puzzles within the room. These puzzles can take various forms and styles which are up to the designer. As a whole, the puzzles need to act in concert with one another while providing a diverse set of challenges for the players. Because escape rooms are inherently team activities, puzzles tend to be designed to ensure that every member of a team contributes in a meaningful way.

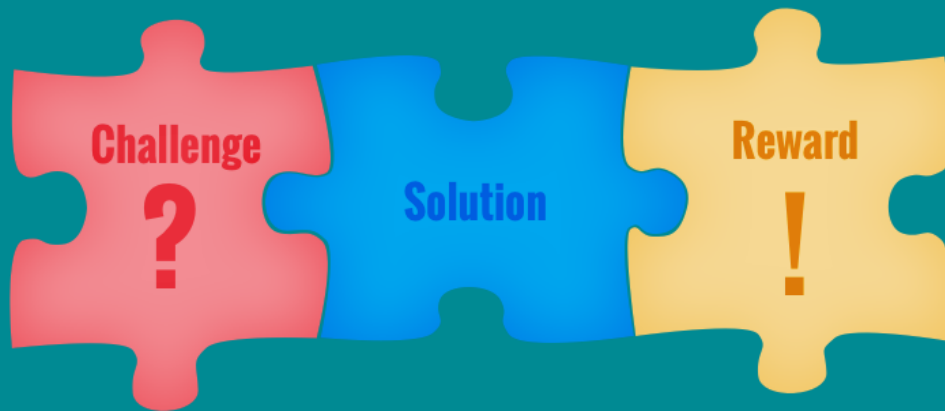
The puzzles themselves need to be connected to the theme of the room and be understandable by the players based off of information available within the room. In the case of physical challenges, this too should be completable based on items found within the room (If the players need to manipulate a physical artifact then the tools should be present in the room. For example, escape rooms cannot rely on players to bring their own screwdriver).

Although an escape room is more experiential than it is just a series of puzzles. At its core, an escape room puzzle uses a simple game loop:

1. A Challenge to overcome
2. A Solution (may be concealed)
3. A Reward for overcoming the challenge

THE PUZZLE COMPOSITION

The puzzle makeup at its core



An example of this can be found in the common use of the combination lock on a lockbox:

1. The challenge is the locked box.
2. The solution is the combination.
3. The reward is the contents of the box.

A puzzle will hide the solution and it's up to the team to decipher this puzzle to overcome the challenge in order to get the prize.

To expand on the example, the locked box (the challenge) may have a three digit lock on it. On the box is a picture of a sun, moon and star. The puzzle presented to the player is how the picture of a sun, moon and star relate to a three digit code (the solution) to open the combination lock. In this simple scenario, the room could hold a scene of the night sky, and in the sky would be a sun, two moons, and four stars. The solution to open up the combination would be 124.

AN EXAMPLE ESCAPE ROOM PUZZLE

Challenge



A locked box requiring a three digit combination.

Solution

Room has one sun, two moons and four stars. These symbols are on the box, giving us the solution 124.



Reward



Once the box is open, the reward is inside. This could be a clue, another puzzle, etc.

Of course the above is a simple example and puzzles can be more elaborate. The reward could be more information for another puzzle, or a chain of puzzles leading to one huge final puzzle. But in the end, it's simply a challenge, a solution, and a reward.

The criteria for a 'good' puzzle is subjective and can be elaborated on for many pages. For our purposes, when evaluating puzzles there are design elements to check:

- Is the puzzle integrated into the storyline?
- Are the clues to the puzzle logical?
- Can the puzzle be solved using only the information within the room?
- Does the puzzle add to the atmosphere to the room?

If the answer is yes to all of the above then you have potentially created a good puzzle. A puzzle should follow the game loop and be a part of the greater whole of the room experience.

Puzzle Types in Escape Rooms

Puzzles can be categorized into two basic approaches: mental and physical.

A mental puzzle makes use of the player's thinking skills and logic. In order to overcome the mental puzzle, the players must deduce, correlate, or decipher clues to arrive at an answer. This type of puzzle is cognitive.

A physical puzzle, sometimes known as a 'task' or a 'twitch' puzzle requires the manipulation of real world artifacts to overcome the challenge and get the reward. For example, a maze is a task based puzzle. There is no 'trick' in solving the maze, you just need to get to the exit. Crawling through a laser grid is another task based puzzle. These puzzles are usually used to eat up time or provide a challenge for people who do not like mental gymnastics.

These puzzle types can obviously be used in combination with one another. A cryptogram may take a while to deduce, however, once the answer key is figured out, it will also take a while to translate. Or possibly a puzzle is obscured by darkness so another player needs to generate light via a bicycle.

Lastly, there is one more type of puzzle which is the meta puzzle. Although not a separate type, this tends to be used as the final puzzle for an escape room. In a meta puzzle, the final answer is derived from solving previous puzzles. For example, let's say as the players progress through the room, jigsaw puzzle pieces are found with every other puzzle solved. Once they have completed all the other puzzles do they get every jigsaw piece. This jigsaw is the meta puzzle and when put together, it will lead the way out.

THE META PUZZLE

The META PUZZLE is solved by combining the pieces and clues gathered from the solution of two or more previous puzzles.

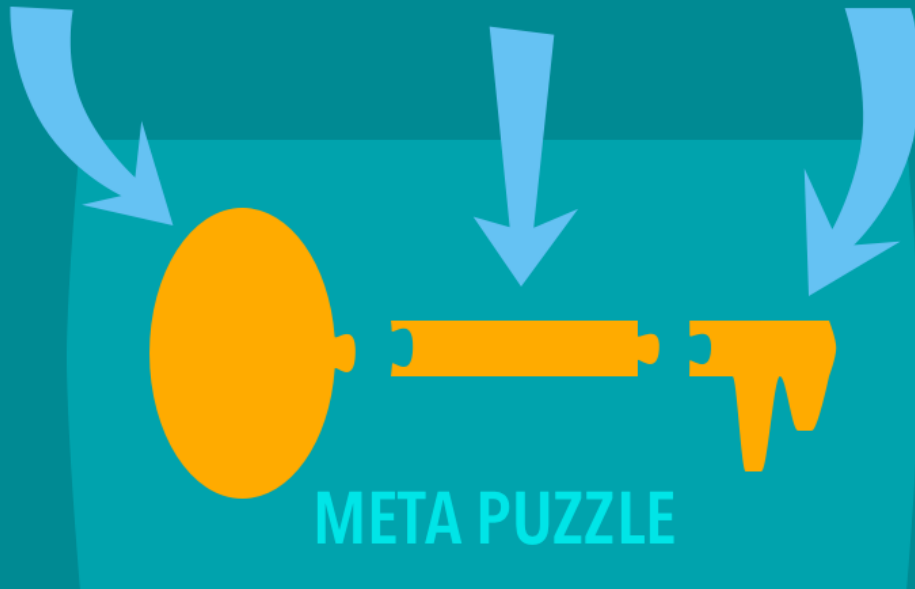
PUZZLE #1



PUZZLE #2



PUZZLE #3



Ultimately, the puzzles should be designed for different skills so everybody on the team is engaged.

Puzzle Path Design

There are three core approaches to creating a path of puzzles for players to follow:

- Linear path
- Open path
- Multi linear path

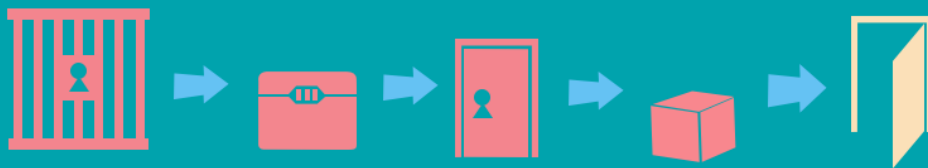
In a linear design, the puzzles must be done in order. One puzzle will lead to the solution of the second puzzle and so on. Given the built-in structure for a guided experience, the linear design is easier for players to solve, as well as for room owners to design. The negative of a linear puzzle structure is a player bottleneck: if the advancement of the game relies on one puzzle, and if the puzzle can be worked on by only one person, then that leaves the rest of the team doing nothing.

The open path design will have puzzles that can be worked on in any order. Normally, however, the final puzzle to escape the room cannot be worked on until all the other puzzles are complete. Open path design tends to be more difficult for players to solve since there isn't a clear indication on where to start. This design is conducive to large groups of players because it gives everyone a chance to be involved and decreases the likelihood for bottlenecks.

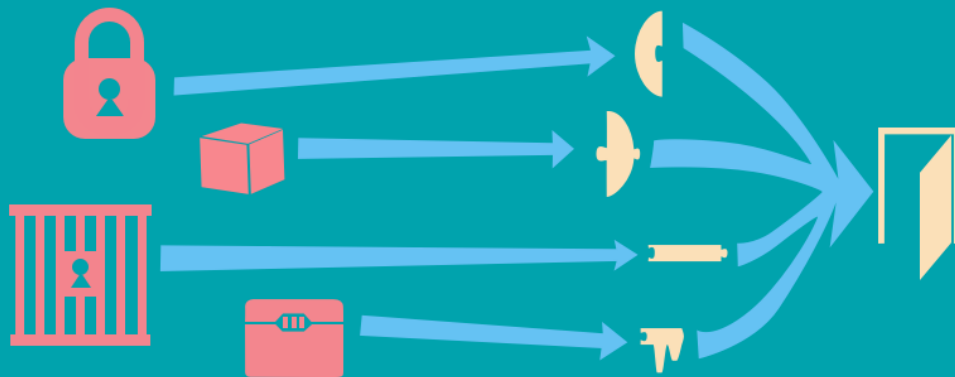
Multi linear path is a series of linear path puzzles which can be done in parallel. It is possible to have multiple paths that intersect or paths to have different ending points. All paths could be open to the players from the start of the game, or they can be revealed over the course of the game, whether it be by a timed effect, or from the solution of other puzzle paths.

Puzzle Path Design

LINEAR PATH Puzzles are done in sequence. Solving one puzzle will give an object or clue to allow the next puzzle to be solved and so on.



OPEN PATH Puzzles can be done in any sequence. However, the final puzzle to escape the room is normally a Meta puzzle.



MULTI-LINEAR Combining both Linear and Open Path, multiple linear paths can be worked on at the same time, or require previous paths to be complete.



Hints - Guiding Players Along the Path

The person overseeing the room is known as the game master and it is up to that individual to help the players if they get stuck. The game master can be in the same room or monitor the player progress from elsewhere, commonly at the front desk via camera. The game master is responsible for introducing the game to players and greeting them when the players win. During the gameplay, the game master may need to provide hints.

Hints are usually provided to players who get stuck and can be delivered in a number of ways, the most common being:

- By voice - using an intercom, walkie-talkie, telephone, video.
- In person - either the game master is always present, or the game master is summoned by a call button.
- Via pen and paper - hints can be slipped underneath a door.

Delivering hints is one thing, but escape room facilities have different systems on how many hints are given and even when to give them. The difficulty of a room increases by limiting the hints, or by modifying how the hints are given.

Below are some common ways game hints are offered:

- Set number of hints available on request - e.g. Players have a maximum of two hints to ask for throughout the game.
- Unlimited hints - Players can ask for as many hints as they want.
- Earned hints - Players may start off with a set number of hints. Solving puzzles will earn them extra hints.
- Purchased hints - Players may buy extra hints.
- Hints as a penalty - Hints may be given, but as a penalty to time and/or score (if the room is being scored).
- Guided game with hints available on request - Players are given hints depending on whether the game master deems it necessary to progress. Players also have the option to ask for hints.
- Guided game but hints not available - Players are guided through the game by the game master, however hints requested by players are not given.
- No Hints - Rare is it for a room to offer no hints. However, some rooms may reward players who solve a room with no hints. The reward may come as a physical prize, or a placement on a leaderboard.

Escape Room Themes and Immersion

Despite the above focus on puzzles, an escape room is more than a simple lock on a box. Giving the players an immersive experience is usually the goal. An immersive experience is one that gives the player an engrossing and engaging activity that makes them lose track of time

and outside concerns; they're suspension of disbelief allows them to be absorbed by the game theme.

A good book allows you to experience the protagonist's situation. A good movie pulls you in and you forget the outside world. An immersive escape room transports you and your friends to a locked room where only your wits can save you. In all these scenarios, you, the player, leave the real world behind and become someone new.

Like in other games, the concept of flow is important. Flow is a mental state a player can be in while playing the game. Indeed, it is the ideal mental state for players. When one is experiencing flow they are fully engaged in the task at hand and focused solely on it. The idea is from Mihály Csíkszentmihályi, who noticed artists can get so immersed in the moment they forget to eat and drink. He called this state of total immersion 'flow' because it is like water taking people down a stream of creativity².

There are key factors that flow encompasses which designers ought to be aware of. When experiencing flow, players get a merging of awareness and action while being in the current moment. They also lose track of time and feelings of self-consciousness during the game, just like an artist does when creating. If done right, the players will be rewarded intrinsically by being engaged in the challenge; and, in order to do so, they need agency over the situation (the player's choices matter).

Players enter a state of flow when they are challenged and entertained. If a challenge is too hard the player will enter a state of frustration and give up; whereas, if the challenge is too easy, the player will get bored and stop playing. A well designed game keeps players between a state of frustration and boredom. If done right, the players have a better chance of entering this desired mental state of flow. As designers, the goal is to encourage players to be just as immersed in the game as an artist can be in their work³.

The subject of immersion and video games have been discussed and studied, and one site terms it as 'spatial presence'.

*Characteristics of games that facilitate immersion can be grouped into two general categories: those that create a rich mental model of the game environment and those that create consistency between the things in that environment.*⁴

The theming of the room, the room decor, the puzzles, the narrative, all of it work together to create a believable experience. Almost every escape room has a theme and it is imperative the theme is reflected throughout the entire game for a believable experience. This means the props, tasks, and the puzzles should all be connected to the narrative and ultimately to what you

² Csíkszentmihályi, Mihály (1996), *Creativity: Flow and the Psychology of Discovery and Invention*, New York: Harper Perennial, ISBN 0-06-092820-4

³ Clare, Adam. Flow. In *Escape the Game: How to Make Puzzle and Escape Rooms*. 1st ed. Toronto: Wero Creative, 2015. eBook.

⁴ cf. Jamie Madigan, 2010: The Psychology of Immersion in Video Games. Article available at <http://www.psychologyofgames.com/2010/07/the-psychology-of-immersion-in-video-games/>

are trying to convey with your room. If the puzzles do not connect seamlessly with the rest of the themed experience, then the puzzles will lack context and the players will not engage with them in a meaningful way.

A theme can be of any subject, but they commonly revolve around an escape motif. For example:

- Escaping a serial killer
- Escaping a prison
- Exploring an Egyptian Tomb
- Dealing with vampires/zombies/curse/ghosts
- Escaping an asylum
- A heist

Regardless of the subject matter chosen, themes allow for great creativity on the room designer's part on how to build a room. Some escape room owners have hired movie set designers to have their rooms as believable as possible.

Owners come from a variety of backgrounds. Some are escape room enthusiasts, others are video game designers, and some are from the theme park industry. For example, a number of owners are from the haunt industry: those involved in creating haunted house attractions. With skills in creating an immersive environment, they can now add a more structured interactive experience based on game design.

To even further enhance a player's involvement, some have employed actors to carry out roles within the escape room. These rooms are similar to interactive theatre like that of *Sleep No More* (although with a focus on game instead of performance).

There are many ways to expand upon the richness of the mental model of the escape room environment, far more than we can discuss here.

The Skills Required in an Escape Room









An escape room is a mixture of mental and physical challenges. Rarely is it required for a person to be physically fit or particularly dextrous to complete a room; they do challenge players more mentally than physically. However, escape rooms will try to simulate an experience of being trapped and this may require the use of stairs, ladders, crawl ways or trap doors.

Escape rooms are inherently a team based activity because of the time pressure, the quantity of puzzles, and the benefit of different minds that don't think alike. A good escape room will incorporate various puzzles that appeal to different ways of thinking. For example, an escape game may have a handful of math puzzles, some visual puzzles, a word puzzle, and a lot of

objects to find. All of the elements ideally come together to form a challenge only a well balanced team can overcome.

On top of that, some puzzles require more than one person to operate. For example, there may be buttons around the room and different people will need to press those puzzles.

In the end, a team should be composed of different people with different skills. If a team thinks and acts in the same way, they have less of a chance to escape the room. The following is a list of skills helpful in an escape room. Although not every skill will be used in every escape room, there are common puzzles that warrant these skills being in the list.

	Searching	Hiding a clue or an object is a common tactic.
	Observation and Discernment	Rooms can hide clues via obfuscation. Knowing what is important and what is not is key.
	Correlation	The ability to relate clues to the correct puzzle. Sometimes requires a leap in logic. Also good for the meta puzzle.
	Memorization	For remembering sequences of numbers or symbols.
	Math	Sometimes with no paper. Shape algebra is common.
	Words	Anagrams, cryptograms, anything with letters
	Pattern Recognition	Clues can form of a pattern: i.e. sequence of numbers. Inductive reasoning is useful here.
	Compartmentalization	Helpful for Open Path Rooms. Needed to break up and visualize a room into individual parts.

Because escape rooms require such a diverse set of skills there is usually the need for one player to take on the role of team leader (sometimes called overseer). This individual tends to be good at Compartmentalization and Correlation, but more importantly, they will help guide different people to work on different areas. They are most useful in an open path or multilinear room design.

The inherent multi modal and team based mechanics within an escape room means that it is likely that all players will be engaged. Even if the person is good with only social skills they too can contribute in a meaningful way by helping coordinate other players.

Variations on Escape Rooms

There have been a few attempts at varying the escape room experience. Included here are the competitive escape room, the score based escape room, and the large scale escape event.

Competitive Escape Rooms

Teamwork is the focus of escape rooms, however, there are rooms that take advantage of the player's competitive nature. Some facilities have the ability to have teams play against each other in identical rooms, with the winner being the one who escapes first.

Others may put teams against each other in completely different rooms. The author has seen one example where a room exits into the opposing team's room, the goal being one team is trying to catch the other.

Score Based Escape Rooms

A facility can attach a score to their room, with points allocated based on tasks, time and penalties. For example, a room may deduct points for hints requested, or a room may give bonus points for unlocking bonus secrets within the room which are not part of the core puzzle path (colloquially known as Easter Eggs).

Large Scale Escape Event

This event is meant to be played by multiple teams all in the same room (or rooms) at the same time within the given time limit. Although the teams are independent of each other, there is a minor competitive element where they try and solve the challenge in the fastest amount of time.

On Escaping an Escape Room

Whether it be with cheers or groans, all escape rooms come to an end. Many facilities offer rewards to those who have completed the room. Group photos are common, as is small prizes for winners.

Leaderboards are reserved for players who have completed an escape room within the time limit, with first place reserved for the team with the fastest escape time.

Even here, facilities will have different criteria on who makes it onto the leaderboard:

- Fastest time - Regardless of how, whomever has the fastest time is on the leaderboard.
- Best Score - For score based rooms.
- Fastest Time with no hints - Top spot goes to the fastest players who ask for no hints.

Escape Rooms And Education

As iterated, escape rooms help develop skills in team working, creative problem solving and critical thinking. Considering an escape room can be themed with almost any topic, this makes it appropriate for the classroom. Educators at all levels can benefit from the use of escape rooms, from primary levels to the graduate level.

One organization, Connected Learning, has developed an Escape Room Kit called Breakout EDU targeted at students in younger grades to their final years of secondary education. They have a kit for purchase containing a number of different components used within an escape game. Alternatively, they provide an open source list so that one can purchase the components for themselves.

With this kit, there are a number of scenarios freely available on their website for a complete game an educator can run with their class. Further to this, any educator can create their own scenarios to be used with their curriculum. Given the open source nature of Breakout EDU, it is a viable solution to bring to the classroom.

One exercise which can be done with students at any level is to have them design their own puzzle path for a room, or even an entire room. By taking on the role of a designer the students will uncover more about what it takes to design an escape room. Students can then engage in teacher guided inquiry to figure out how to convey their educational message, and the complications of designing for other people. Throughout the creation process the educator may intervene with relevant information.

Educators at the university level and higher can make use of the Breakout EDU kit or even use existing escape rooms. With older students you can take on more critical material and content that would not appeal to younger ages and topics. It may be practical to have students at the university level play an escape room themed on World War One but the message of the horrors of war may be too intense for your younger players.

Regardless of which room is played (and the subject matter) educators can use multiple didactic methods to debrief the experience. The most obvious may be an experiential method since escape rooms themselves are based around the overall experience of the player. If the experience itself is not the educational message then there are other methods one can use to

deliver educational meaning or context. The mechanics of the puzzles should relate directly to the educational content being delivered.⁵

Since escape rooms have a debrief period when the game concludes there is a perfect opportunity for an educational discourse. During this part of the game experience players can talk through how they solved the puzzles and what aspects of the puzzles proved difficult. This can naturally lead into a Socratic discourse amongst the educator, designer, and players. If so desired, educators can create a list of discussion questions about the educational connections beforehand.

It is also possible to integrate escape room attractions into museum spaces. If this is considered then the best approach is to design for the grade level the institution is focussed on engaging. The concerns around the educational experience and the game experience need to be balanced and adjusted accordingly. In some cases it may be appropriate to have puzzles that can be changed to alter difficulty and educational obliqueness.

The Escape Room Community

Escape rooms have gained visibility within the mainstream media, showing up on a TV Sitcom, (*Big Bang Theory*), Talk Show (*Conan*), and even a game show (*Race to Escape*).

Social media has brought a number of enthusiasts and owners together, the most prominent being a facebook group with around 1500 members. This was initiated by Scott Nicholson, Professor and Director of the Game Design and Development program at Wilfrid Laurier University, who put together a white paper surveying 175 different escape rooms.

In the 2015, there was the first Escape Convention⁶ held in Stuttgart, Germany, offering a number of workshops and presentations related to the escape room Industry.

In North America, Scott Nicholson ran the first Escape Room Unconference⁷ in Toronto, Ontario, Canada. They brought together sixty escape room owners, designers, and enthusiasts with the intention to better understand the industry and promote the community.

⁵ Clare, Adam. Stay on Trend. In *Escape the Game: How to Make Puzzle and Escape Rooms*. 1st ed. Toronto: Wero Creative, 2015. eBook.

⁶ "Escape Games Convention". Web. 23 Nov. 2015. <<http://escapegamesconvention.de/en/>>.

⁷ "Ontario Escape Room Unconference 2015". Web. 23 Nov. 2015. <<http://bgnlab.ca/blog/2015/10/27/ontario-escape-room-unconference-2015.html>>.

Challenges for Owners

Playing an escape room is one thing, but running one has brought up many challenges on its own, considering how new the business is.

Many cities do not know what an escape room is, let alone categorizing it for zoning issues. When starting an escape room, owners must take into consideration fire safety laws, how to book teams, and the particular laws of their city. For some, it is illegal to lock a person in a room. Handcuffing a person may be illegal. Crawlspace, trap doors, anything the public will be subject to is all under scrutiny.

And once the business is open, there are a number of challenges with running the room itself. Maintenance of an escape room is a problem. Many players will resort to forcing a puzzle open as opposed to solving it.

Locks are available at any dollar store, however, these locks weren't meant to be open by multiple people, multiple times a day. Flashlight batteries will need to be changed on a daily basis. Any clue on paper will need to be laminated. Anything not intended to be moved should be bolted down, because it will be moved. Any puzzle with delicate electronics can be especially prone to malfunctioning. A trapped player is a destructive force.

Care must be given when choosing employees. They need to understand the room and how to solve the puzzles. They will also brief the players and give proper clues. Furthermore, they need reset the room for the next team of players.

Resetting a room must be done perfectly and quickly. A game will be broken if a key or clue is missing, souring the whole experience. Time taken to reset the room, is time taken away from players paying and playing.

Considering rooms are custom made, safety should be a high concern. Players will do just about anything to solve a room, and anything open to touch will be examined. Electronics, sharp objects, moving parts, fire hazards, heavy furniture, all of this and more should be taken into consideration.

There will always be a fine line between a profitable room and a good experience and there are many complications an owner will face. However, there is one problem escape room owners struggle with: an escape room can only be played once. Unless the room is completely Task/Twitch based, there is no point in redoing a room. For an owner, the holy grail of escape rooms is the repeatable room for repeat business.

The Future of Escape Rooms

Escape rooms are puzzles in a room. For a lot of rooms, this involves a number of boxes with locks and different ways to unlock those boxes. For some rooms, a theme isn't attached and the main goal is escaping. These are known as First Generation escape rooms.

Second Generation rooms brought immersive elements. The quality of the sets and props used were elevated. Electronic and technical components were used to bring about automation and triggered events. Narrative was added to the immersion, implementing a story to help involve the players more.

There is debate to what the Third generation of rooms will hold. Will it be more complicated/expensive artifacts? Will it encompass more immersion, including sound, smell, taste, touch? Will the use of actors for more social interaction be employed? Or, will it be something entirely different?

Conclusion

Escape rooms are experiencing a growth in interest from players, corporations, and educators. It is worth looking into all the aspects we have examined in this paper in more detail. The design of the rooms can be better deconstructed and the motivations of the design can equally be further examined.

Despite the fact that escape rooms require a multitude of skills and knowledge, rarely are the concerns around accessibility brought up. Future examination of rooms being made accessible be it for players in wheelchairs or players who need other consideration is needed.

Further to this is the need to look into more structured play experiences for theme parks and interactive theater. We wonder what are ways that escape rooms can merge more effectively with other, existing, forms of entertainment.

As more escape rooms get built and opened more research and critique is needed. How escape rooms are used by corporations for training and by educators for learning would be an area of interest. Scott Nicholson has looked into escape room owners and it is important that we get equally valid look into the players and what motivates them.

Escape rooms are part of gaming's future.

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