EDUCATIONAL AND INTERCULTURAL ESCAPE GAMES: A METHODOLOGY

ESCAPE YOUR STEREO - TYPES

Association Odyssée, France
Leeds Trinity University, United Kingdom
Kuryboslab, Lithuania

Co-funded by the Erasmus+ Programme of the European Union

PROJECT

Escape your Stereotypes

CODE

2018-3-FR02-KA205-015240

Co-funded by the
Erasmus+ Programme
of the European Union

This project has been funded with support from the Erasmus+ programme of the European Union. The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

TABLE OF CONTENTS

SECTION I - INTRODUCTION TO THE PROJECT.....1

1. **Escape Your Stereotypes Project**
2. **History of Escape Rooms**
3. **Types of Escape Rooms**

SECTION II - DESIGNING AN ESCAPE ROOM FOR INTERCULTURAL LEARNING.....4

1. **Introduction.....5**
2. **Learning decisions.....5**
   a. Define learning objectives
   b. Take into account learning styles and preferences
   c. Plan learning outcomes
   d. Consider the participants' prior knowledge
   e. Playtesting for learning outcomes
   f. Identify constraints and scope of the game
3. **Narrative decisions.....13**
   a. Plan story and setting
   b. Define the roles of players
   c. Define the protagonists
   d. Define the antagonists
   e. Playtesting for narrative elements
4. **Game mechanics decisions.....14**
   a. Define the shape of the game
   b. Define the flow of the game
   c. Identify the padlocks
   d. Identify the puzzles
   e. Identify codes and ciphers
   f. Define the role of facilitator(s)
   g. Competition VS collaboration
   h. Define hint mechanism and create a hint script
   i. Time the game
5. **Create the Game Design Document.....23**
   a. Fill in the Game Design Document

SECTION III - PROTOTYPING AND PLAYTESTING THE GAME.....24

1. **Prototyping the puzzles and the game.....25**
   a. Plan the testing session
   b. Paper prototypes
   c. Digital prototypes
   d. Physical prototypes
2. **Playtesting the game.....27**
   a. Playtesting for ensuring learning outcomes
   b. Playtesting for narrative coherence
   c. Playtesting the game mechanics

SECTION IV - BUILDING OUT THE SPACE.....28

a. Define your space
b. Measuring up and using the space
c. Furniture and construction of items
d. Special effects, sound and lighting
e. Digital elements
f. Health and safety

SECTION V - RUNNING AN ESCAPE ROOM FOR INTERCULTURAL LEARNING.....33

1. **Setting Up the Game.....34**
   a. Location and venue
   b. Set dressing and props
   c. Adjustment to group size
2. **Briefing the players.....35**
   a. Health and safety
   b. How to play the game
   c. In-character mission
3. **Hints and hinting during the game.....36**
   a. Roles of non-player character(s)
4. **End of the game.....37**
5. **Debriefing and reflection.....37**
   a. Kolb's cycle of experiential learning
   b. Facilitator's notes and feedback
   c. Peer feedback
   d. Consolidating learning and action planning
   e. Conflict resolution

SECTION VI - SHARING SUCCESS.....41

a. Evaluating learning and transformation
b. Sharing your game
c. Feeding back on the Escape Your Stereotypes Project

APPENDICES.....43

1. **Escape room design worksheet - learning design**
2. **Escape room design worksheet - narrative design**
3. **Escape room design worksheet - game mechanics design**
4. **Escape room design worksheet - game flow diagram**
5. **Puzzle design document**

SECTION I

INTRODUCTION TO THE PROJECT

ESCAPE YOUR STEREO - TYPES

The Escape Your Stereotypes project

The goal of the Escape your Stereotypes project is to create an educational escape game focused on interculturality and the fight against prejudices and stereotypes. We will produce a methodology and a ready-to-play Escape Game which will be freely accessible.

Co-funded by the Erasmus+ Programme of the European Union

Escape your Stereotypes project is supported by the Erasmus+ programme of the European Commission.

In a context of rising nationalisms in Europe (Brexit, euroscepticism etc.), our project wishes to work on the rapprochement of cultures in order to help the construction of a Europe which is not only economical and political, but also with a human dimension.

In our view, intercultural learning can not be taught, it should be something that someone experiences. Indeed, it is by encountering and exchanging with the other that we become aware of a stereotype and that we can learn to know and understand each other, to break down stereotypes and prejudices. In order to offer adequate intercultural learning support, we are convinced that it should be based on the principle of "Learning by doing" in a playful way. That's why we chose the escape game as support to achieve our goal.

In order to carry out this project, 3 partners with different fields of expertise are committed to Escape your Stereotypes:

Association Odyssée is an association involved in the fight against stereotypes and prejudices with previous experiences in the management of European projects and in setting up activities aimed at intercultural learning.

Leeds Trinity University is a university involved in European programmes which developed an expertise in pedagogical escape games.

Kuryboslab is an association with an expertise on building educational escape games for young people and youth workers as a tool to develop social, personal and other competences in a non-formal context.

The target groups are young people (volunteers, students, trainees, apprentices, pupils, learners, but also young people with fewer opportunities, NEETs...), organisations working with young people in various contexts (school, informal learning organisations...), youth workers, staff active in education and training...

More information on the project:

www.escapeyourstereotypes.eu

Project n°2018-3-FR02-KA205-015240

Contact us:

Marilou BREDA, France:
mbreda@associationodyssee.fr

Liz CABLE, UK:
L.Cable@leedstrinity.ac.uk

Audrius LAURUTIS, Lithuania:
kuryboslab@gmail.com

What is an Escape Room?

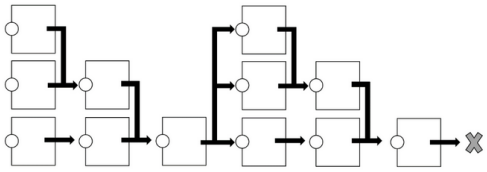
An escape room is a **themed space** set-up with **puzzles, ciphers and challenges** that **players** have to solve in order to **escape** within a certain amount of time, usually an hour. An escape room is created as one or more rooms housing puzzles, codes and conundrums to enable the progressive opening of a series of containers, and eventually unlocking the door of the room itself.

Teams get a set amount of time inside the room to escape, usually 60 minutes, and the players can be aided by human or automated hint-givers when they get stuck. The aim is to complete the mission and escape the room in the fastest time with the least hints.

Escape rooms can have any kind of theme or story, although the most popular themes are around bank heists, raiding Egyptian or Greek temples, escaping a serial killer or diffusing a bomb...

Escape rooms are essentially a series of containers that have to be opened with keys, combination codes or passwords obtained by solving puzzles and completing challenges.

Even the room itself is a container, and a single game can consist of several rooms. Depending on the way the room is designed, a team may be able to tackle several challenges at once, or the game may be in a linear format, meaning that once a team is stuck on a puzzle they can go no further without a hint from the Gamesmaster.



History of Escape Rooms

1976 Escape rooms are a common video game format, with examples from the earliest text-based adventure Colossal Cave in 1976, through point and click graphic adventures, to modern day Virtual Reality. The common thread is solving puzzles to complete the game and escape.

1986 In 1986 the British TV show the Adventure Game challenged a team of celebrity contestants to escape the planet Arg by solving scientific puzzles and conundrums to earn a crystal to power their return trip to Earth.

2007 In 2007, Takao Kato of the Kyoto publishing company, created the first “Real Escape Game” and SCRAP games creating the first large scale versions of escape games, playable by multiple teams at once in a **2011** hybrid of table-top games and escape rooms. In 2011, the Hungarian company ParaPark launched its first location of a worldwide franchise in Budapest, aiming at the corporate training and education market, and based on personality tests for team-building. Shortly after the first commercial escape game launched in Seattle in the US, whilst Gabriel Palacios a science professor in Bern, Switzerland, launched Adventure Rooms based on an educational puzzle and science-based games he created for his students.

It is clear that right from the start of commercial games, the use of escape rooms for educational purposes was being explored at the same time. As the industry has developed, so the definition of an escape room has broadened to include immersive theatre with “escape-room elements”, clubs like “The Bletchley” in London, UK, where players crack codes to earn drinks, and longer games aimed at enthusiasts, such as Paradox in Athens, Greece, which has three games in excess of three hours each, and Prison Escape in Breda, Holland, a 3 hour prison break experience for upwards of 100 players.

2020 More recently, with the Covid-19 pandemic closing escape rooms across the globe, the experience has gone full circle with web cameras and video conferencing software allowing remote teams to dial in from anywhere in the world and play the game vicariously through the gamemaster as an avatar in the room. This has led to a whole new swathe of experiences including some rooms were props, locks and machinery can be controlled from your laptop, and others where printables and online videos combine to create a transmedia experience entirely divorced from a physical space.

Types of Escape Rooms

An escape game is different from a commercial Escape Room, as it allows for a wider definition, specifically much bigger games for more people at once, and a more open interpretation of the space and the time the game takes.

In a pub quiz you have to answer questions correctly in order to score points, and you compete in teams to have the highest score. In an escape room, if you don't answer a challenge correctly, you will not be able to escape.

Escape Rooms also share common ground with Treasure Hunts in that each successful challenge and container opened will contain some information about the challenges ahead.

Commercial Escape Rooms take place for the most part in fictitious settings. Some companies create their own story-world that links all their games together; ClueQuestHQ in the UK is famous for its anthropomorphic evil sheep intent on world domination. However, there are a few companies who specialise in creating site specific games for historical locations which are built around real world events, locations and mysteries.

The curators can engage with visitors in a different way and attract a demographic of people to cultural sites that would perhaps not normally visit. These cultural and historical games also attract tourists and the school audience and are built with educational goals as much in mind as entertainment. They are often run as pop-up games – though this doesn't mean any the less robust – to take over a location for a certain amount of time. Like the Save The Alien themed escape room at the Eden Project, UK.

In the corporate market, table-top games have taken off to cater for large team-building events and conferences where the same game is duplicated multiple times and played competitively by teams who each have their own individual copies of the game in one large room.

Versions of escape games that work similarly to promenade theatre, with teams working through the puzzles sequentially, work well for public events across a large outdoor space, and this method can be adapted for indoor delivery using a series of stations that get reset between teams.

For our purposes in intercultural education, we are keen to encourage collaboration, team-work, communication and discovery, so some formats of escape games lend themselves more to these outcomes than others, as we will explore in this document. It's also important to consider the context of the game; the activities and exercises that wrap-around the experience of the escape room itself to ensure that the learning takes place can be as important, sometimes more important for uncovering and discussing bias and prejudice than the time spent trying to escape. The whole experience that we create may be quite different in focus from a commercial escape room.

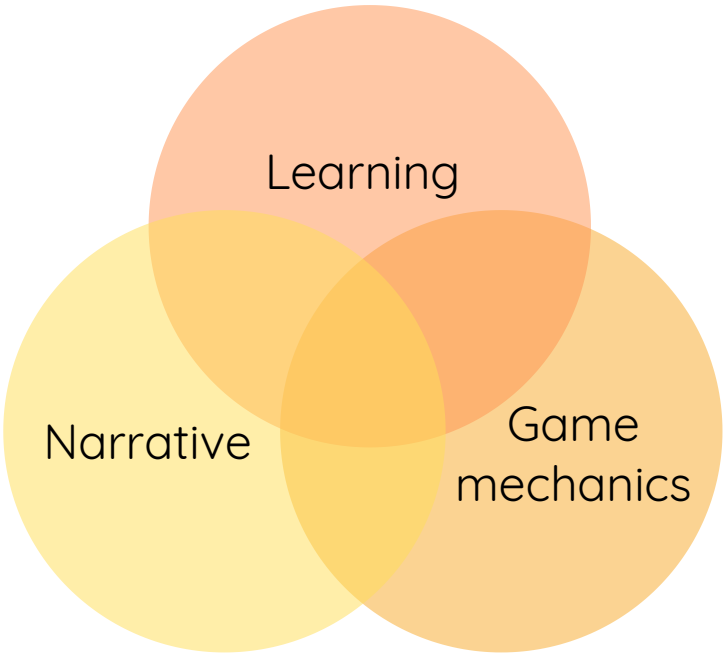
Escape Rooms in tourist areas are sometimes written in one or more languages. The documents in the game, and the clues and hints, can sometimes be bi-lingual. In an intercultural escape room, the language that the game is played in takes on more significance, as we want the players to communicate perhaps beyond a language barrier within the team. So again, our game might be designed to have challenges – perhaps of translation or communication – that would be considered out of place in a public escape room.

SECTION II

DESIGNING AN ESCAPE ROOM FOR INTERCULTURAL LEARNING

Introduction

The three elements you need to consider to design an educational escape game – learning objectives, narrative and game mechanics – are interdependent. For example, if you want every participant to experience a particular challenge in order to achieve certain learning outcomes, then you need to design the game's shape and flow so that each player has that experience. This means making that challenge into a gate, or making the whole game linear, so ensure every player "touches" that puzzle. The learning objectives may dictate a story that by literal translation into the game, or by allegory, introduces the concepts you want the participants to reflect on and to discuss.



Learning decisions

Learning objectives are an overview of what the facilitator wants to teach, so they are expressed as overarching aims for the course.

Learning objectives are your overarching aims for the game experience. These might be quite loosely phrased around gaining understanding or raising awareness. Generally, learning objectives are what the facilitator wants to cover in a session. You might start with a great idea for an experience, prop or puzzle, and build the rest of the game around that.

There are several models of learning that can help us in Escape Room design. There are obvious arguments against attempting to label learners as preferring this method or that method of teaching, or having this or that kind of intelligence, but we all do have preferences, skills and prior experiences that prime us to be better at one type of puzzle than another, and so in the interest of creating a room that has sufficiently different challenges to allow each player to get involved and develop new learning skills, it is worth recapping a couple of these models in context.

- Gardner's Nine Types of Intelligence
- VARK model of learning preferences

Focus on Gardner's Nine Types of Intelligence

Howard Gardner's model of multiple intelligences translates well into escape room design. Eight substantial 5-minute puzzles is about right for a beginner's escape room, so a simple way of designing a varied set of puzzles for a room is to create one puzzle to cater to each of the first eight types of intelligence. Remember though, that you can't assume either knowledge or a particular skill set, so the puzzles must be able to be done by anyone, no complicated maths equations! We're just using the model to ensure variety. Usually a puzzle will mix different elements together, or transpose an answer in one format to another, and this means it's more likely that players will work together to solve them.

1	Verbal-Linguistic Intelligence	• Rebus puzzles • (near) Homophones (e.g. won and one) • Rhyming and rhythm of words • Scanning large amounts of text for relevant information • Story puzzles
2	Mathematical-Logical Intelligence	• Logical and mathematical problem-solving • Performing experiments • Following instructions • Discerning logical and numerical patterns
3	Musical Intelligence	• Finding, matching and replicating patterns in music: rhythm, pitch and tone • Musical memory
4	Visual-Spatial Intelligence	• 3-dimensional building & deduction • Graphics and images, including visualisation, scaling & extension of images • Mirrors and lenses • Colours and patterns
5	Bodily-Kinesthetic Intelligence	• Navigating mazes on different scales • Driving model cars or drones • Throwing and/or targeting • Physical co-ordination challenges
6	Interpersonal Intelligence	• Deduction puzzles involving moods, motivations and desires of game-world characters • Interrogation and role-play
7	Intrapersonal Intelligence	Puzzles that require an understanding and awareness of cognitive bias. For example: Overcoming functional fixedness to use a spoon as a screwdriver.
8	Naturalist Intelligence	• Recognising plants, animals and other objects in nature • Understanding of the natural order of things
9	Existential Intelligence	• Tackle deep questions about the meaning of life. • Thinking about issues of society and quality of life. • Narrative problems with creative solutions and responses.

Sometimes a player will be reluctant to play a "puzzle game" - maybe they have already tried common formats like crosswords or sudoku, and have low expectations of their own success.
If you hear someone saying "I'm no good at this" before they have even tried, tell them "you might surprise yourself - we've made sure there is something for everyone's skillset"

Focus on VARK model of learning preferences

The VARK model is another useful checklist to map the content of our game to different modalities of learning and ensure we have puzzles that meet each preference and ensure variety in our games.

Auditory/Aural learners prefer to hear instructions and to verbalise their own thoughts. To engage a learner with a preference for an auditory learning style in your game, begin with a verbal briefing, and consider creating puzzles that require:

- Listening to messages, tones or music
- Reading out instructions to the group
- Pulling relevant information from a background soundtrack
- Role-playing with an actor or having a live conversation.

Visual learners have two sub-channels—linguistic and spatial, or read/write and visual non-verbal. Learners who are **visual-linguistic** like to learn through written language, such as reading and writing tasks. To engage learners with this preference in your escape room provide them with the ability to take notes. eWriters like Boogie Boards, whiteboards or flipcharts are great for this rather than just a notebook and pen. **Visual non-verbal** learnings prefer visual representations of facts and figures. They like charts, diagrams, plans, maps and infographics. They like to watch videos and have a good memory for faces and places. To engage a learner with this preference consider creating puzzles that require:

- Using checklists
- Following instructions
- Deciphering graphs, charts, illustrations, or other visual aids
- Tests of visual memory
- Discerning or recalling patterns, colours, faces and visual information
- Sketching or describing figures and patterns.

Kinaesthetic learners also have two sub-channels - **kinaesthetic** (movement) and **tactile** (touch) – this emphasis on feeling can also extend to the physical feelings associated with emotions. Provide different coloured pens if you can. For kinaesthetic learners consider puzzles that involve:

- Tactile skills such as feeling different textures, or reading numbers or letters by touch alone
- Manipulating objects and pieces of objects in 3 dimensions
- Fast or rhythmic movement
- Music
- Transferring information from one medium to another.

Explaining different learning styles before the game starts can help players understand they might have different roles in a collaborative solution. Design your puzzles so that they are made for a team to solve: e.g.
V: Making connections between different images, or holding images in working memory. Remembering & communicating colours, size and physical attributes
A: Spread the puzzle pieces around the room so that clear communication is key, use instructions and precise descriptions passed between players
K: Lots of pieces to find, curate, sort and order.

Plan learning outcomes

Learning outcomes are expressed in terms of the effect that reaching them will have on the participant by enabling them to do something they could not do before. A simple way to express an outcome is to start with the phrase “The participant will be able to …” This is helpful when you assess the participants learning and it’s also useful in puzzle design.

Learning outcomes are the very specific skills, knowledge and attributes that you want the players to demonstrate as a result of participating in the game – whether this is during the game, afterwards, or after additional input later in the curriculum. Will you create a puzzle or challenge to give the players experience of an activity, situation or point of view, that you can refer back to much later in their learning, using the escape game to seed learning points through a shared experience.

→ Consider your learning outcomes against the 7S model: Setting, Social, Story, Skills, Strategy, Simulation, Self.

SETTING

The physical space in the game, its function and location within the story world and real world

You may not have much choice over where your game is set in the real world, but you want it to ring true in the story world. You might be staging the game in a plain old classroom or modern office, or maybe a village hall or an outward bounds centre. When you start by finding a reason that the game you want to make is set in that physical location, so many elements of the game begin to fall into place from the narrative to the set-dressing. If you want an archaeological dig as the focus of a game, but can't create anything like an ancient tomb, you could instead create the office of the Archaeology professor on a university campus, or a temporary warehouse where the items from the dig have been sent for cataloguing.

Alternatively, the setting may be part of the purpose of the game. You may want to familiarise the participant with the layout of a courtroom, or assembly hall, or interview suite or a library. This may be to get the players using the space for its function, or the space may provide an immersive backdrop for a simulation.

If you are able to build the set, make fixtures and fittings and create the exact location you want for the setting, there are some ideas for how to do this in a later section.

You could consider creating a bundle of papers and props for the game that are delivered to wherever the players are, for the game to be played as a present-day investigation of a geographically and/or chronologically displaced narrative. Imagine receiving a packing crate or a battered suitcase bequeathed to you by an eccentric uncle, or a briefcase – it doesn't matter if the game is set in an office or a classroom, the story lies within the artefacts.

It's important for the story to fit within the setting, that way everything is in game and everything is a potential focus for curiosity and a sense of wonder. It is very off-putting to be told to imagine what is not there before the game has even got going. "It is night in the deep dark woods, and you have stumbled across a cave…" simply doesn't fit a classroom with an hour to go to the lunch-bell.

SOCIAL

The interactions and collaboration with other players and Non-Player Characters

The aim is for the players to work together using a range of soft skills to communicate, co-operate and collaborate, in order to get to know each other, and to appreciate each other's approach and contribution. You may decide that the players will have to role-play with one or more characters in order to find out information. Asking the right question is like putting a key in a lock to get the answer needed to progress.

All of this could test their social and communication skills, their ability to make an argument, build a relationship, persuade someone, etc. In order to design a game that helps the players notice and appreciate their differences, the designer must ensure that they are given the chance to work together to achieve a goal. Perhaps surprisingly, this is not an automatic outcome of putting people together in an escape room on the same team. If you design the game so that there are many starting points and paths to follow, players can split up and solve their puzzle paths individually, which means not only do they not work with each other, but that subgroups may form that increase divisionss in the team. It will also mean that individual players do not get to see every puzzle, nor will they see the skills of every puzzle solver.

We must design the game so that, for at least some of the puzzles, the whole group is at the same point in the game needing the same puzzle to be solved, and that those puzzles – the gateway puzzles – are perhaps the ones that require the group to all work together. This means that you need to consider the physicality of the puzzles, how many people can see them and manipulate the puzzle pieces at once. So if you have a game with several files, or letters, or record cards, or whatever information the players need to sort through, make sure the items are physically large enough to be seen by more than one person at once, and that there is enough for everyone to have a prop from the same puzzle in their hand so they can all solve it together.

Physically affixing puzzle pieces to walls and having line of site barriers between them is one way of making sure several team members are involved at once in the solution. Another way to ensure that the players collaborate in a meaningful way is to give them each a role within the story world that comes with specific responsibilities in game. This means the team is reliant on each member fulfilling their unique role and gives them a different perspective on the narrative.

STORY

The narrative that leads the players through the game and gives them their roles and mission

There is an opportunity to tackle real life issues in an escape room. In Germany there is a game brought over from the UK called "The Divide" that addresses homelessness. In the UK the twin games Dystopia and Utopia play with the idea that there are two sides to every story, and that story crucially can be the tale we tell ourselves about why we live the way we do. Underground Escape in Arkansas uses key historical moments of the African-American experience, such as voting during the civil rights movement to train participants in diversity and inclusion.

Our intent is to design games that highlight matters of intercultural relations, and so the narrative could address this directly in a conflict the players are there to resolve, or it might touch on elements through metaphor, perhaps by using a game about first contact with aliens, or it might simply be a narrative that provides multiple opportunities for the players to work together and address their own intercultural learning in that way.

We want the players to feel that they are involved in the story and have some agency over the outcome, by choosing between options, or by creating their own response to the game's final challenge. We may want them to feel empathy for the characters portrayed, and to care about what happens them.

The end of the escape room does not have to be just opening a locked door. An escape room can have alternative endings that the players choose between, that choice can be as individuals or as a team, or it can even have more creative outcomes, where players for example leave messages for future players of the game, or their outcome could be that they decide to join in an ongoing quest for societal change.

Creating a "bait and switch" scenario creates a second opportunity for the players to engage with the storyline. So, the brief they are given at the start gets superseded by a mission the players discover in-game. When Aladdin went to get the lamp from the cave for his uncle, he did not know then that his uncle would turn out to have nefarious purposes in mind, and he did not know that the lamp was magical and contained a genie who would change his life. The purpose of the brief is to explain enough to get the players in the door and engaged in play.

Having the players decide whether they want to complete the mission once they have all the information, or if they want to do something else entirely is a great way to get them engaging thoughtfully with the subject matter. An escape room can be designed to open up a story world to a class that can then be touched on in subsequent lessons to feed both imagination and further enquiry.

SKILLS

A demonstration of the ability to complete a specific task

Whatever the puzzle, there is a moment of realisation when the player knows what needs to be done, and then there is simply the matter of getting on with doing it. The puzzle has become a task. In an educational escape room it is valid to test the student players or to introduce a skill that you wish them to acquire. You can also test their knowledge or their knowledge acquisition skills. In a commercial room, it is a common design concern to ensure that there is no outside knowledge required to finish the game. All the information needed to solve a puzzle is provided within the room – this is interesting from an intercultural perspective because different cultures may well have different common knowledge.

Something as simple as tally marks can be different across countries, including them in your game becomes a source of interest and discussion.

English tally marks : 𝍸
(Also use in parts of Europe, North America and Australia):

French tally marks : 𝍷
(Also used in Spain, Brazil, Chile, Argentina):

Chinese tally marks: 𝍹

For example, I'm British and played a game in France where knowledge of Roman numerals was required – not something we are taught in the UK. To get around this in the game you could have a clock with roman numerals, or a book with page numbers, or some other form of "Rosetta Stone" to enable translation between the two. You could even have a short written/visual tutorial if you wanted knowledge of Roman numerals to be a learning outcome, and then get the participants practicing with more than one puzzle in the game.

Knowledge in an escape game can be explicitly provided, can be assumed from previous teaching input, or it can be retrievable by the players who you expect to use real world information retrieval skills as part of puzzle solving. This is something you should make explicit in your brief for the game, and ensure your hints are appropriate for the response you require. Seasoned escape room players don't expect to be able to use their smartphones. If you want them to google something, let them know this is both allowed and expected. Knowledge retrieval, acquisition or recall can be the skills required by any puzzle. Knowing the musical scale or the colours of the rainbow will advantage some players, but this knowledge can't be expected. For younger or less experienced participants, a lab-book or a field-guide or similar notes made by a protagonist in the story can help guide them through the game and provide timely notes and diagrams or pointers towards relevant information sources.

Of course, skills can also be physical. Or you might have them use higher order thinking skills where players are pooling a lot of information and processing it together. Ensure that what is being asked of the players is within their ability to perform. You can ask them to demonstrate the same skill more than once, so different players get chance to try their hand, and it can be slightly harder each time.

STRATEGY

Adopting the mode of thinking of the discipline or the roles being played

A strategic challenge is one which doesn't concentrate on one discrete element of learning but requires the participants to think holistically about several elements at once. Perhaps you want them to follow a particular process through to solution, and that requires several different elements to come together, or perhaps the puzzle requires them to work together in a particular way. It might be that the discipline has a certain mode of thinking that you want the participants to practice. Perhaps they will need to create a strategy for communication in a multi-lingual team. This could be as simple as getting them to create their own mnemonics or memory aids or use appropriate skills to solve a problem.

In a game I made to revise book-keeping, the students created a set of accounts as they went along, which meant each calculation relying on the last one being correct, and therefore the game being linear in design.

As you design the game, you can create puzzles that require the answers to the previous puzzles in order to move on (this is not common in commercial games).

In the game flow section of the document, you will see that there are sometimes meta-puzzles, or gate-keeper puzzles, that require all the puzzles before them to be solved before the players can move on. You can design the game so that the players create for themselves the information they need to solve future puzzles as outputs of earlier puzzles. So, to our list of knowledge acquisition, knowledge retrieval and knowledge recall in escape games, we can add knowledge creation.

SIMULATION

An approximation that takes place over time of real systems and processes

There are higher numbers of papers published on medical escape rooms than any other educational topic, and this is an area where simulation was already a common form of teaching, for obvious reasons. Simulations are ideal when you are wanting to approximate an experience that is dangerous, expensive, or otherwise inaccessible for learning purposes. You can also use simulations that are indistinguishable from the real thing, other than their purpose being to practice. It can be a physical simulation using the actual tools or a model, or a virtual simulation using a digital environment.

If you are using a model or a virtual simulation, then the players may need some instruction in how to use the equipment given.

In an intercultural escape game, it's more likely the simulation might be to roleplay a situation in a particular location, tying into the story and setting of the game. Participants see the relevance and practical application of a simulation and take it as an opportunity for authentic learning that carries through to the real world beyond the escape game in a more concrete way than perhaps some other puzzles.

SELF

The application of attributes, qualities, attitudes and behaviours, and reflecting about thinking.

Escape rooms are a lived experience. They do not start and end at the escape room door but provide an opportunity for an authentic learning experience which is directly and immediately applicable to real life.

The way this is incorporated into the learning will be around debriefing and reflection on the experience both as an individual and as a group, and by building the escape room into an ongoing curriculum that allows the lessons learned to be consolidated.

Giving the participants the time and prompt to reflect on their experience as individuals and as a group will deepen the learning, and we have given some ideas for how to achieve this in a later section.

Focus on learning objectives and outcomes for intercultural learning

Previous Erasmus+ research and practice has defined 5 core components of interculturality, all of which lend themselves to discovery, discussion, and reflection as part of the escape room experience:

Curiosity/knowledge discovery: the ability to be interested in, and to acquire new knowledges about a cultural situation, to put this knowledge into practice in daily situations.
Tolerance of ambiguity: the ability to accept being in an unclear situation, not having all the required information, and facing this in a positive way.
Relation to others: the ability to suspend belief about someone else's culture and one's own culture.
Empathy: the ability to understand what other people think and feel in real situations, ability to manage feelings, wishes and visions of other people and at the same time, realising one's own objectives.
Communication awareness: the ability to establish links between language expressions and cultural elements, to identify and work with various communication methods, to modify one's own way of communicating.

These are some of the pedagogical objectives that we have highlighted for our escape room project. You may have others that you want to concentrate on.

- Allow young people to be aware of stereotypes, deconstruct prejudices by experiencing intercultural situations
- Identify that stereotypes and prejudices may have impacts when interacting with someone
- Understand how deeply integrated are the rules, codes, norms for oneself and someone else
- Understand how difficult it is to recognise and understand new rules, and act accordingly
- Foster a dialogue between people with different visions and view points
- Build a citizen reflection around "living together" or "living in common"
- Reinforce the appetite for living/experiencing intercultural situations
- Overcome the fear of communicating in foreign language
- Use/develop competencies in intercultural communication
- Cooperate and work in teams/peers/groups
- Be aware that different visions, perceptions and values are around us
- Examine personal and others' perspectives about: family, gender, responsibilities, sexuality, management of emotions, proximity, territoriality...

Learning Outcomes that arise from these learning objectives could include:

Learning objectives	Learning outcomes
• Identify that stereotypes and prejudices may have an impact when interacting with someone.	• The player will be able to describe the possible impacts of stereotypes and prejudices on someone when forming a new relationship. • The player will be able to suggest ways of avoiding unconscious bias in interactions.

Consider the participants' prior knowledge

What assumptions are you going to make about the knowledge the players bring to the game?

Are you going to provide everything they need? Or provide them the means to research it?

Playtesting for learning outcomes

Playtesting: how will you validate that the puzzles and the game generate the learning outcomes?

Identify constraints and scope of the game

You will probably have come to the project with the idea that a particular learning objective would make a good escape game, and now you need to bash it into some kind of shape that you can make puzzles from.

However, you will be working under the constraints of not only budget, time, and resources but your own skills in storytelling, prop-building and puzzle-making.

Constraints/Scope: Consider how long you have the players for in total, and for this session. How much time will you have in the escape game session for briefing, debriefing and reflection? How will the escape game session fit into the other sessions you have planned? Does the story need to fit with an established or ongoing storyworld?

It's actually easier to be creative within constraints than to have a blank page, and by working with your constraints of venue, time, topic, team size or whatever from the start, you will finish up with a game that fits all your criteria, and plays all the better for it.

Narrative decisions

Plan story and setting

What's the story? The genre? The setting?

This may be dictated by the venue you have available, or you may need to present the whole game online so the players aren't physically in the same place. Does the storyworld need to be consistent with anything else?

Define the roles of players

What are the players there to achieve? What roles are they playing?

Generally, in commercial escape rooms, players have been trapped, and they are there to help themselves escape. In educational games, they are more likely to be given a mission where the aim is to help someone else – or even save the world!

Define the protagonists

Who is trying to help the players?

That's your protagonist. It could be a group or an individual.

Define the antagonists

Who is trying to stop the players?

That's your antagonist.

What is the role of the facilitator/s – if they are going to be in character?

Playtesting for narrative elements

Playtesting: how will you test whether the players have understood the narrative and what they were intended to learn from it?

I would advise against having more than two sets of motives (those of the antagonists opposing those of the protaganists) within a scenario, the plot needs to be simple enough to understand quickly, and any twists should be clear and unambiguous.

The players play as one team, and need to be debating their actions only when you specifically want them to for the purposes of learning.

To some extent the plot must railroad them along, as every outcome in an escape room is fixed, except where you choose to make it ambiguous in order to make your pedagogical point.

Game mechanics decisions

Define the shape of the game

The shape of the game – Consider how many people will play the game, from which you can work out how many teams of what size you will be working with. Ideally 5 people for a linear game, if you have more players in a team, then to keep them busy you will have to have more than one puzzle that can be completed at once. This changes the dynamics of the game and may interfere with successful learning outcomes for some of the players, unless you ensure that the players share their experiences and their learning as part of the process. Which means you need to decide on the shape of the game. Will it be an Escape Room in the usual sense? Or something more tailored to your audience and location?

The usual way to build an escape game is as an escape room, following the commercial model. That is to have a room or series of interconnected rooms that a small team of 5-8 players attempt to escape from, or to complete a mission within a set time limit. This can be difficult to timetable if you have two or more groups.

You may be lucky enough to have a dedicated space – for a while at least – to build your room.

But if not, don't despair, there are other game shapes that may suit a larger group.

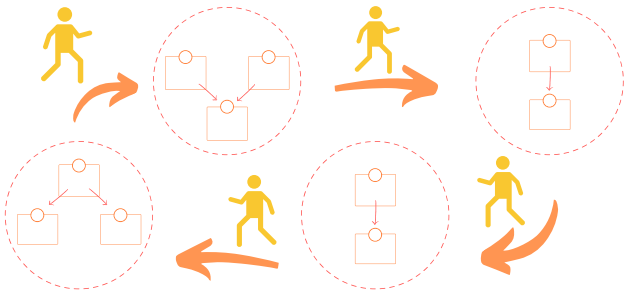
Different shapes:

- Make the Escape Room one of the encounters on a day full of different learning encounters that the students experience in teams. If you have six teams, you could create six encounters all timed, or have a looser day of challenges with a timed escape room experience organised for each team.

- Design and run the game as a table-top experience, with all content duplicated for every team at their own table in a larger space. You can brief everyone at once, and create hints via QR codes or sealed envelopes so that games don't need a facilitator per table. You can have larger items and props in the room for the players to all use, rather than duplicating them. Posters on the wall for example, or a set-piece. The key is to make sure they are very visible so that players aren't tempted to hide them or take them away from the other teams.

- Create the game in one big room that has enough space for each team to have their own table of containers, locks, documents and clues, and have them play the game against each other as well as the clock. You can put outsize clues and puzzle elements on the walls and fixtures, or in the view from a window, so all the teams share some of the elements as they move around the room, but have their own locked boxes to open.

- Create a "round robin" game where each station is a different puzzle, and have the teams visit each in turn, each team starting at a different one. This works really well for a murder mystery style game, where each table contains clues about a particular suspect, but it could equally work well for different countries or nationalities represented at each table. You have to work quickly to reset all the tables between teams. At each station, if they open the final box, they get a piece of the metapuzzle, which they solve at the end of the game. Each station needs to be designed so it takes the same amount of time to solve.



An example of a "Round Robin" layout, each set of puzzles can be solved in any order

I once played a game that involved all the statues in Utrecht having been cursed by a basilisk, which turned the whole city into our game-board.

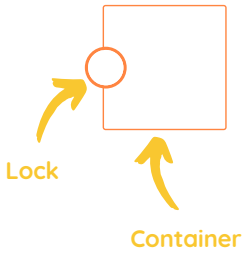
- Create an inside-out escape game. Keep all the locks and boxes central, and have the whole group play at the same time, breaking off into smaller teams to go and visit locations, solve puzzles, role-play with in-game characters, complete physical challenges, and each time returning to the central hub to share what they have learned or attempt to open a lock. This would be a great way of getting a group familiar with a location and is used very successfully for campus induction games. You can use whole buildings or their facades as puzzles.

- If you have the participants a longer time period, over say every day for a week or once a week for a term, you can create an encounter per day, with the narrative moving along in real time. It's a nice warm-up exercise at the start of the session, and the narrative can deepen and converge with the session topics as time moves on. This serial story format also allows you to react to the input of the players, and get creative about how they "solve" a puzzle and what results they get. For example they could have to send an email to one of your story characters.

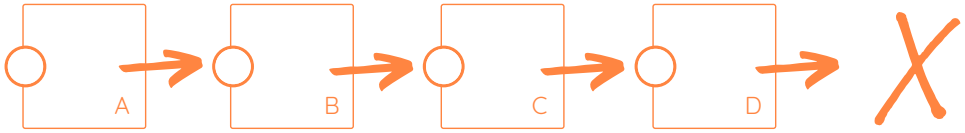
Define the flow of the game

The flow of the game: that is how many puzzles can be worked on at the same time.

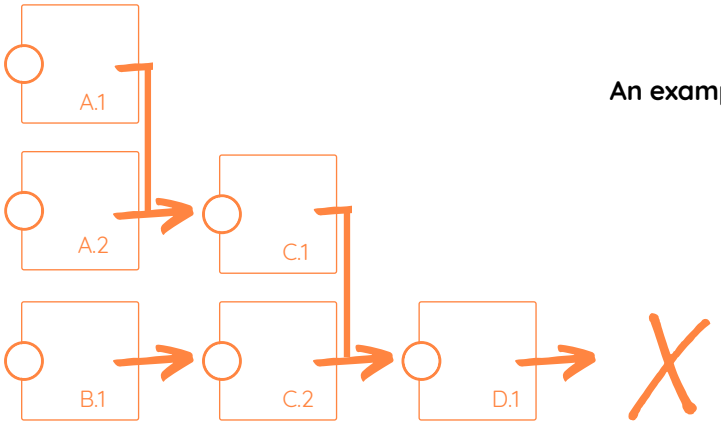
Game flow is about the order in which the containers are opened, and how you gate elements of the game so that the teams have to have completed certain tasks before they can go further. A bit like the level-boss at the end of a platform video game, that you have to defeat before progressing to the next level. This ensures that the story plays out in the right order too.



The simplest game flow is **linear**, where the contents of each box (plus elements that may be already available in the room) give you everything you need to solve a puzzle and work out the code to open the next lock in the sequence. This has the advantage of keeping everyone working together all the time, though it can lead to frustration as there isn't the opportunity to "come back to" a puzzle with fresh eyes later on. If you get stuck on a puzzle, you are stuck in the game.

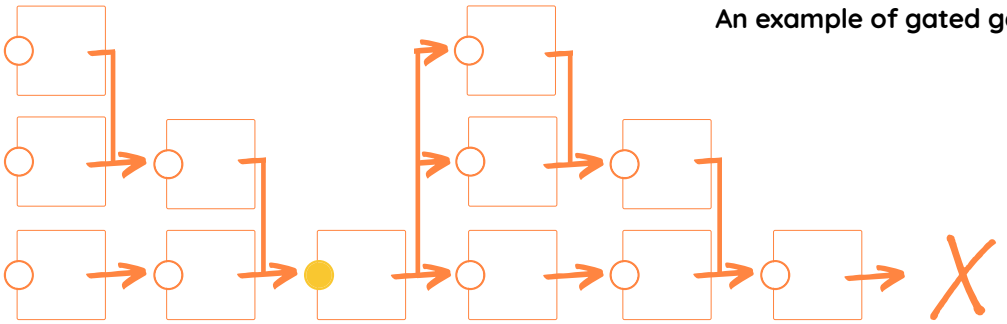


Non-linear game flow is where some, or even all, of the puzzles can be completed at the same time, so the players will split up into sub-units to work on solving them. This means each players experience will be unique to them. It is a more difficult flow to design and to reset, and can cause problems with puzzles interfering with one another, so you will need to watch for this in testing.



An example of non-linear game flow

Gated games allow for two or more "acts", usually the gate is an entrance to another room or section that then opens out to more puzzles in parallel. This helps with designing the game to fit the story as the players uncover the narrative.



An example of gated game flow

The lock on this container is what's known as a gate, ensuring the players have to complete all the puzzles before it in order to move forward. This could be to a new room, with all new puzzles that then open up the opportunity to have players to puzzles in parallel with each other.

Identify the padlocks

What padlocks or other types of lock will you use?

Escape Rooms at the very least contain a series of containers with locks that have to be opened by obtaining codes through the solving of puzzles. The meaning of the word puzzle expands in this context to include ciphers and codes, riddles, and even sometimes physical tests of dexterity or skill. This may mean that as well as working out a combination code, the code may be revealed or awarded in some other way once the challenge is complete.

As a puzzle designer (or puzzle-setter, as they are known in the puzzling world), the first rule is to always design your puzzles to a padlock. When you buy a lock, make sure it is one that is resettable, so you can set the code to match your puzzle.

You can get a padlock that also has a key to bypass the combination in case of a player or Gamesmaster accidentally resetting or forgetting the code. It's more expensive, but it could be worth it.

Types of padlocks

Number locks: can be 3, 4 or 5 digits. There are some pushbutton mechanical locks that allow the numbers to be pushed in any order, but these are generally not resettable, so you have to write your puzzle to the code you are given. **Coloured number locks** can be useful as the colours can provide a clue as to the order.

I don't recommend three-digit locks because these can be brute-forced really quickly, unless there are two together on a briefcase or similar, or you use two at a time. If you have to use a three-digit lock, make sure it is only accessible at the point in the game that it is needed, to limit the risk of successful fiddling.

Letter locks: can be three, four or five letters. The five letter ones can have a blank space so you can use it for a four-letter clue. Be careful when buying letter locks with removable tumblers. Ensure that the locks are made to have sensible words, and that if you need more than one because you are duplicating a game, each lock is the same. If you search for the make online you should be able to find a list of all the possible word combinations. If this is not given, it may mean your tumbler selection is random, and you will have difficulty creating a code-word with it.

I would stick to shorter sequences than 100 though, certainly single digits.

It's a good idea to have one of these directional lock available for players to practice with before the game starts, there is a bit of a knack to it, and they need to know how to reset it with a double click on the shackle if they put in a wrong answer.

Directional Lock: it allows any number up to 100 of directions to be input. You can set puzzles where the answer is expressed as Up, Down, Left, Right OR North, South, East and West. You can also add your own stickers to the lock, some are supplied, but you could also draw your own, so the code becomes, for example, Hearts, Diamonds, Spades and Clubs.

Date lock: Players will just input every date they can think of, or that happens to be visible in the room, including today's date. It can be an easy one to get them started, or if a date, or knowing how to work out a correct is somehow useful – Bastille Day for France, The Queen's birthday for the UK.

Safe-style lock: These are complicated to open, and if people are not familiar with them, you may need to give explicit instructions.

3D Printed Locks: your local hackspace may be able to help you with custom tumblers for a pre-bought padlock. There are also suppliers online who can 3D print tumblers with whatever symbols you require.

Passwords: you can build a whole escape room with no locks at all using passwords. The players figure out the solution as a word or a phrase, which they then enter as a password into a computer form or USB stick, or they have to announce it to the gamesmaster to get access to the next puzzle.

Transpositions: Every puzzle has to have an answer that opens a locked container. If you want the answer to be "Timbuktu" then no padlock will work for you, instead this will need to be a computer password or a code-word given verbally to a character. Another way to handle this is to have a look-up table, or in this case the look up could be a map, where finding Timbuktu, or the Town Hall, or the lecture theatre on the map you have provided gives the players the co-ordinates which they can enter into a padlock.

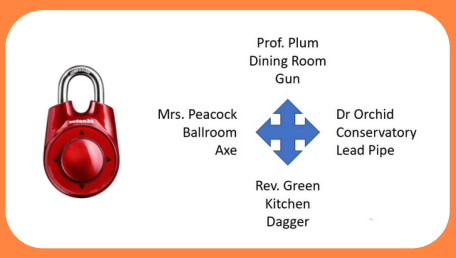
You could use a course book or a travel guide as a lookup table so the players look up their answers in the index, and this would fit well with your learning objectives and narrative:

Gagne, R. 39-42	Heutagogy 105-6
Games 171-2	Herring, Red 23, 75, 98, 144
Gamification 23-25	Hints 5, 104

You just work backwards from the possible answers (the index entries with 4 or 5 digits as page numbers) to create your puzzles.

Another way of doing a transposition is to create a puzzle-specific lock by re-labelling a directional padlock. You can have multiple answers per lock position, in this way you could turn a directional padlock into a letter lock like this, with a diagram on paper.

In a murder mystery where the answer is "Professor Plum with the lead pipe in the ballroom", would be resolved on this lock as UP, RIGHT, LEFT, or North, East, West.



If your game should be available in different languages, we advise you to use codes with numbers instead of letters.

Here is an example puzzle

Learning objective:
A group of exchange students need to find their way to their accommodation using a map. You want them to know which bus or tram to catch, where the accommodation is, where the classroom is, where they will be having dinner today, and the location of the museum they'll meet at on Wednesday.

Learning outcome:
The young people will be able to point out on a map of the locale the key locations for their visit.

Puzzle:
You can create a puzzle involving following the movements of a character around the city on a map. The journey can include every location they need to know, plus some random other locations which you will put in to ensure the journey is a series of cardinal directions so that the answers can be in the format N,S,E & W.

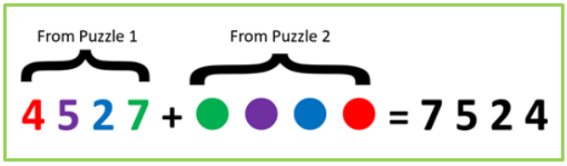
Dependent on your plot, the players will get a map of the location, along with some directions. Plain directions are not a puzzle, and don't move your narrative forward. So perhaps it's a police report, or it might be a journal entry, or a witness statement, or a taxi driver's routes for an evening. It's up to the players then to use the two documents together to come up with the directions to open the directional padlock.

Identify the puzzles

There are a huge variety of puzzles used in Escape Rooms all over the world, here in particular we are looking for puzzles that can help with our intercultural learning objectives. Obviously, we want an element of fun too, as part of the purpose of the game is to make lasting memories of the experience, for all the right reasons, and for it to be enjoyable.

This section will be informed by the puzzles created by the participants in the project, and will be updated throughout.

Most padlocks, as we have seen, require two pieces of information to solve. The digits to use as the code, and the order in which to use the digits. Mechanical push button padlocks only need the digits, and often when you design a puzzle, the order of the digits will be revealed when the puzzle is solved. However, when you have a puzzle that reveals only the digits or letters of the combination, you have an opportunity to add another layer to the puzzle to reveal the order.



Sometimes a puzzle you make is a task by another name. Simply making the answer something you put into a combination lock does not make solving quadratic equations into a puzzle. Adding another layer to the puzzle, which is effectively a whole second puzzle, can help you get a learning outcome alongside the puzzle. It also adds another aha! moment when the players realise that the two elements need to be combined together to get the answer.

Make sure that you theme the two puzzle layers so that it's clear they go together. In the example above, the colours clearly match, but be sure that there aren't any other elements in the room that use this colour coding. Any visual cue that directs the player to think the two elements go together can be used.

Here is another layer to the puzzle above: **6 4 8 5 2 3 3 7**

So the players have to 1. Find all the puzzle pieces that could apply, 2. Eliminate the ones that are not relevant (e.g. suspects who have an alibi in a crime investigation), 3. Pick out only the relevant information – the numbers 4,5,2 & 7 in this case, and 4. Discover the circle code 5.Match the circle code to the numbers.

I am not suggesting you use this puzzle as it stands, it's pretty boring, but replace the numbers and the colours with elements that match your theme and push your story forward.

I am not suggesting you use this puzzle as it stands, it's pretty boring, but replace the numbers and the colours with elements that match your theme and push your story forward.

Below are **more puzzle types** that can be used on their own, or combined in layers to make more challenging puzzles:

Reveal Puzzles: The players complete a task, challenge or puzzle, and in doing so reveal or trigger a reveal of the answer or a further part of the puzzle. Reveal puzzles can also require a tool:

- An ultra-violet torch might reveal hidden information on the walls or props.
- A red lens - this can be a plastic overlay, or coloured glasses reveal part of the puzzle or the answer.
- A USB stick or computer can contain files (for the next puzzle) that can only be access with a password.

You could consider codes as a reveal puzzle too, as these need the codebook to solve.

Logic Puzzles: The players eliminate various options until only the right answer is left. Keep these as simple as possible so that players can work them out on the spot without having to resort to logic grids. These make good meta puzzles. As they tend to require a drip feed of lots of information, you can have the players collect various pieces of evidence as they play the game, so when the puzzle is presented they are already familiar with the puzzle elements, and may have in fact solved some already.

Pattern-matching Puzzles: All puzzles have an element of pattern matching – if only to match the right lock with the puzzle, or combine two elements of a puzzle to get the full solution. Spotting patterns, similarities and dissimilarities, counting elements…

Inventory Puzzles: If you've ever played a video game with puzzles in it, then you'll be familiar with inventory puzzles; when you need to combine elements in the room in a perhaps unusual way to progress. In video-games a lot of humour can come from the random combinations. In a live escape room, we can see how inventive people are, and how they get over a cognitive bias called functional fixedness.

I'm sure we've all used a knife or other utensil to unscrew a screw in our lives when there is no screwdriver to be found, or used the straight edge of anything in place of a ruler, these are both real-life inventory puzzles: using what you've got to make what you need.

Anagrams: Anagrams are an easy way to add an extra layer to a puzzle. However, the more on theme the word is, the more likely the players will just put it in the lock and open it by bypassing the puzzle entirely.

It is recommended not actually using a word if you can get away with it plotwise, instead use 5 random letters, or make it a word that is not immediately obvious. You need to be sure the answer is unique, and once hit upon, will fit the narrative so well that the players know it is right. We used the anagram KIRDN in a story about a drunken professor. When you get it, you KNOW it's right. Opening the lock just confirms it.

A neat idea might be to have a puzzle resolve to a word in one language, that when translated to another language fits the lock. This is fair as long as there is some sort of clue that this is what is needed – maybe the puzzle is found slipped in the pages of a French/English dictionary?

Using the word "SANTA" in a Christmas-themed game was the big mistake that taught me this lesson! If you do use an anagram, make sure that there is only one possible solution (in ALL languages for your intercultural game). In English teams = meats = steam = mates = tames etc.

Mazes: Physical mazes that you have to use a magnet to drag a metal ball around, or a remote control to drive a car around, are a staple feature of commercial escape rooms. They can be painted on walls or floors or built into the furniture. If there is only one correct route through the maze, you can use the pathway to signify something else – such as the order of something, or spelling out the letters of a password along the way, or if you draw the route it spells out letters or numbers. Make it a team game by having the maze on one side of a frame, and the magnet is affixed to the other side, meaning two people at least have to work together to complete it.

Although the terms **code** and **cipher** are often used interchangeably, they have distinct meanings.

- **A code** replaces whole words with other words, for example "The kettle is on" becomes "The burglary is happening", so you need to have a code book to solve it.
- **A cipher** replaces individual letters, so for example an alphanumeric cipher replaces letters with a number representing their place in the alphabet A=1, B=2, Z=26. The key to deciphering a cipher is knowing the method by which it was encoded.

A simple cipher is one which requires only one transposition or method to produce or solve it, and all simple ciphers can be cracked without knowing the encryption method, if you have enough time to do so, which is rare in the escape room format. Be aware that some players will happily sit on their own for however long it takes and solve it using the letter frequency method, so you can not rely on using this sort of puzzle as a gate, as it might get cracked earlier than you expected and without any further instruction. **Bellow are codes and ciphers types:**

Alphanumeric Substitution: Numbers = letters, you just need to create a key for this if it is anything other than 1 is A, 2 is B etc.

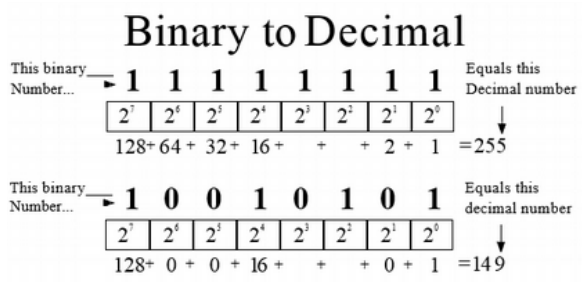
Morse Code: This one is interesting because it is designed to be an audio message, but can also be written down or done in flashing light form. You could even use it in a three-dimensional way, for example using buttons (dots) and toggles (dashes) on a ribbon or fastening the jackets of a row of stuffed toys.

Indexing: Indexing is a way of hiding words and information inside passages of text. You may be familiar with acrostic poems, where the first letter of each line spells out a word or hidden message. It can be made more complicated by adding a puzzle layer, and using letters other than the initials for the codeword.

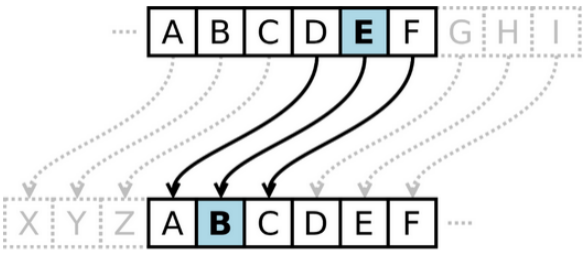
Combining this acrostic with a puzzle that leads to the answer 1, 12, 11, 16, 2, 7, gives you a classic index puzzle. What's the solution?

> Puzzles maintain.
> Unresolved dilemmas.
> Zany rooms perplex.
> Zealous puzzlers cogigate.
> Let's escape fastest,
> Enigmas expect.

Binary Code: Expressed in zeroes and ones, binary code represents both letters and numbers. Sets of five is most common as five bit binary can represent decimal digits up to 32. This can be written down or presented by lights (on or off) or toggle switches (up or down) or any element that exists in only two states. You will need to have a crib sheet for binary in the room, though, and its presence should alert players to look for rows of five "things" in the room they can decode.



Caesar Cipher: Also called a shift cipher, all you need to know to decode the ciphertext is how many letters to "shift" forward or backwards. In this example E becomes B, so to translate the code back you shift the letter forward three spaces in the alphabet. A cipher wheel can help players with this, and provide a hint.

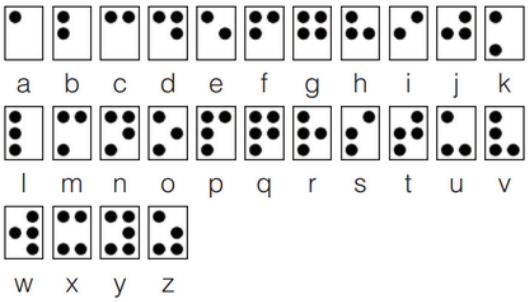


Braille: Braille is a standardised code based on a 2 x 3 grid. It can be useful in the dark, or inside or behind something where the players can't see, but they can feel.

There are different systems of Braille for different languages, however Unified English Braille is the standard.

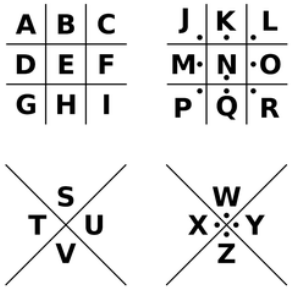
You could also get the players creating the letters for themselves by using true/false answers to indicate whether each position in the grid is a dot or not.

This would be tedious with a long word, but for a three or four digit combination it wouldn't be too onerous. You could also hide the raised parts in a picture or document, so the code is hiding in plain sight.

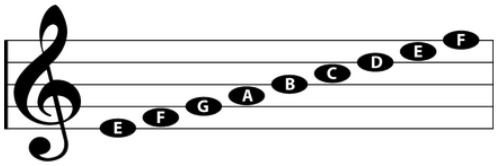


Pigpen Cipher: This cipher has a twist because it is rotationally symmetrical, so if you implement it in a way where the orientation is not fixed, the players will need to work out the orientation as part of the deciphering.

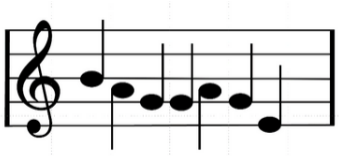
Like many of these ciphers, you can find them freely available online as a font style.



Musical scales: A - G only can be encoded using the notes on the staves, although you could use different notes on the same stave to encode more letters.



So BAGGAGE becomes:



Musical notes naming depends on the countries.

English and Dutch-speaking countries name notes by using the first seven letters of the Latin alphabet: A – B – C – D – E – F – G.

Most other countries, including Italy, France, Spain, Portugal, Romania, Greece., eastern-Europe countries, Turkey, Arabic-speaking countries, Persian-speaking countries and most of the Latin American countries use the solfège naming convention: do, ré, mi, fa, sol, la, si.

Random Letter Cipher: Mapping letters of the alphabet onto other letters randomly is a valid cipher, but without several of the more common letters given elsewhere in the room somehow, it may be tedious and time-consuming to solve.

Route Cipher: as long as you keep the grid small enough, it can provide a good "a-ha!" moment:

A	B	O	R	T
T	H	E	M	I
S	S	I	O	N
Y	O	U	H	A
V	E	B	E	E
N	S	P	O	T
T	E	D	X	X

Your own cipher: like Tolkien who created Dwarven and Elvish runes, you could create your own symbols for letters, numbers or words, as long as you provide the key in the room somewhere. Especially good for alien or ancient civilisation or fantasy rooms. Be careful that the deciphering task is kept short so it is not just a time sink. You can split the key into parts, or even not have a key for every letter, just the most common, so the rest have to be deduced by the players.

Define the role of facilitator(s)

The role of the facilitator/s : will they be in character or out of character? Inside the room with the players, or elsewhere? Whether you are in character during the game or not, you will be the Gamesmaster throughout and you will facilitate teamwork and learning.

Competition VS collaboration

Competition v collaboration – are the teams going to be working against each other? Will they see each others' progress?

If you have a timed competitive game, and at some point all the teams come together to solve a final challenge, it looks good on paper, but doesn't work in practice. The team who works hard to be first to get to the point of co-operation gets frustrated, and with nothing else to do tends to disrupt the other players rather than collaborate with them.

From one Gamesmaster to another, I'd say either make it all collaborative, or all competitive.

Define hint mechanism and create a hint script

The hint mechanism – which will depend on how you are using the facilitators.

Your **hint script** should be developed along the timeline of the game. With the players getting their first hint, if needed after 10 or 15 minutes in a 60 minute game. You will start with an estimate of where you think the players should be in the game against the clock, for example they should have solved half of the puzzles by half the time allocated for the game, and then as you watch the prototype game in play, you will develop a more sophisticated understanding of how long each element needs to take, and how much time the players have in hand. Maybe the last half of the puzzles only take a third of the time? That way the players rush towards the final puzzle on a wave of quick solutions, and then the tension really hits on the final puzzle with the clock is ticking down.

Hints also need **playtesting**. In some commercial games the hints are deliberately cryptic, which can be frustrating for players who are already having to ask for help. However, you can't just tell them the answer either, to be told the solution with or without explanation is just demoralising.

You will need to develop a set of hints, maybe three for each puzzle, that gradually grow more pointed in the direction they give.

In Amsterdam there's a game where a mad monkey delivers timely notes under the door. It sounds a bit bonkers but works entirely in the delightful fantasy of the story world. Instead of the notes being direct hints, because they are delivered in-character they can be further cues or clues to add to the original puzzle.

In an educational game, you really want the players to be more likely than not to escape the room or to complete their mission. It's also a good idea to aim for a **hint-free game**, so the players can be completely immersed in the collaborative play and not interrupted,

Giving a hint should be a last resort, and they should be as light a touch as you can get away with. Just drawing attention to what needs to be looked at next, or something the players have forgotten they have seen or found, can be enough to get them back on track.

To take advantage of visual cues that indicate elements of a puzzle that go together, as the facilitator you can do some in-character "tidying up" of the space to create visual groupings or orientations that trigger an aha! moment in a player. Ideally you are giving them hints and cues so discretely and well-timed that the players don't even know you are doing it. If you are in the room with the players, whether that's in-character, or as a facilitator, you could simply ask a player to repeat something they said that the other players overlooked or ignored.

When the play-testers are testing the puzzle, it's useful to have them solve it out loud, either by articulating their train of thought as it happens, or by writing up their process as they solve it online. This detailed description of their puzzle-solving can give you an insight into the vocabulary the players use around the puzzle – which will help you to write specific hints. It will also let you know what different potential solutions they come up with as they go along – some of which may be more obvious or intuitive than your original puzzle design, or you may need to modify your clues and cues to remove ambiguity.

Time the game

Timing the game – what will you use for a timer? Do you want to be able to "fudge" the time if needed?

You don't have to have a visible countdown. You could have alarms at 15 minutes, then final 10 and 5 minute countdown. Or you could have a soundtrack for the game which has a timer built in.

In one game I had a soundtrack that included a countdown to the final helicopter leaving, representing the players last chance to escape certain doom.

The game itself will take a certain amount of time, but you must also allow for any briefing beforehand, discussion afterwards, and any other wrap-around activities that you want the players to participate in outside of the game itself. You may also need to allow for comfort and refreshment breaks.

An escape room is almost defined by the limited time on the clock, so it would be unusual not to have a timer on a game, and in any case, you will be restricted by the session length.

There are several timers online you could use, just type "60-minute timer", there are also numerous video versions.

For a zombie game we made an audio file representing a radio station which had various news alerts on it, sounds of what was happening outside (lots of growling, banging and gunshots) including a countdown to the approach of the last helicopter out of there, and the sound of it landing at the end. By using catching the helicopter as the mission endpoint, the soundtrack could act as the timer with 45, 30, 15, 10- and 5-minute warnings of impending departure. You could create a similar timed soundtrack for different stories. 60 minutes 'til the damn floods, 60 minutes 'til the asteroid hits, 60 minutes 'til the last dance at the prom, etc.

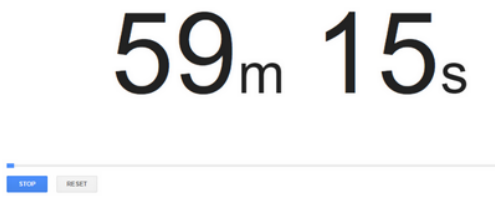


Figure 1 Google's inbuilt timer function, which can play full screen.

If the narrative allows it, you could simply have the players synchronise their phone timers.

Create the Game Design Document

The Game Design Document compiles all the information you need to design and prepare your escape game: Learning, narrative and game mechanics. In addition, a puzzle design section guides you through the plan and design of each puzzle in relation to the larger game.

Fill in the Game Design Document

In the **appendix** of this methodology you will find an **Escape Room Design Worksheet**, made of:

- Learning design worksheet
- Narrative design worksheet
- Game mechanics design worksheet
- Game flow diagram
- Puzzle design worksheet

Fill in each worksheet and feel free to replicate them as much as you need so you can design your escape game.

SECTION III

PROTOTYPING AND PLAYTESTING THE GAME

Prototyping the puzzles and the game

It's important to **test out each puzzle** to see if it works and get an idea of how easy or hard it is, how long it takes to solve, and what you can do to help the players solve it. You can make a puzzle easier by adding in game cues – which are generally design-based markers; or in game clues – which are generally additional written or sketched instructions or information; or by adding external hints which can be made available from the Games Master where needed. There is no need to create the whole physical puzzle in order to test it.

Instead, create prototypes to **test out individual puzzles**, and then once the puzzles are as near perfect as you can get them when delivered separately, you can put them together, and **test the whole game**.

When testing the game you are trying to ensure that puzzle elements are clearly demarcated, so that players know which elements go together to make up the puzzle. If you have created any puzzles which rely on the collection of parts the players should know when they have gathered them all. They shouldn't be trying to solve the puzzle too early – before they have all the parts, or alternatively looking to collect more pieces when they already have everything they need.

You may well find on testing that you have made a puzzle too hard. Prototyping is often about putting back the parts of the puzzle you thought "gave it away" because the solution otherwise relies too much on a leap of intuition.

Sometimes players who are familiar with escape rooms will have a natural advantage over newcomers because they already understand the concepts of collecting parts of a puzzle, or using a red reveal or a black light, etc. As a game designer you may want to ensure that newcomers get an equal chance of escape by providing explicit clues within the game.

In some games you may find that the narrative allows you to have instructions, or a lab book, or a secret agents mission report, or a diary or similar single document to guide new players in what they need to do throughout the game, whilst you can remove this option for experienced players.

It is also important to playtest the puzzles and the narrative coherence as regards the cultural bias and implicit assumptions. The knowledge and know-how of the participants can vary depending on their age, level of training and studies, their origin, their social, cultural and economical background... Life pathways of our participants might impact their understanding of puzzles and missions.

For instance, if your audience is made of participants of various ages, think about using a digital technology that everyone is familiar with - except if your learning outcomes include fostering mutual aid, knowledge sharing and peer-learning. If your game targets young European people and has a reference to a character not internationally known, some of the players might face difficulties.

We had considered a puzzle in which one element was based on a TV ad promoting the quality of a car. However, our target group mainly uses online media with targeted advertising. It is higly possible that our puzzle would have been a fiasco: a part of our players weren't the target of the ad we had in mind and didn't know this reference!

Paper prototypes

Draw up the puzzle on paper and see if it works. If you are using props in the final version then find a similar looking item online, edit it so it has the information needed for the puzzle (it doesn't have to look good, that's not what matters here), and print it out on A4 to let the players see it clearly.

If you design a puzzle to be handled and worked on by several players at once, paper prototypes can help you simulate this additional complexity.

Stick papers to surfaces around the room, with instructions that they can't be moved, to simulate elements and players being out of line of sight to help you discover complexities and difficulties that you can use or lose to suit your game flow.

You can make a paper prototype of pretty much any experience. When mixed with a gamesmaster describing the effects of actions, you can mock-up all sorts of coded elements with a simple audio description backed up by paper sketches of the puzzle in different stages.

If you'd like an example of how this might work, listen some podcasts which features different audio-description escape rooms. Alexa also has audio-only escape rooms which you can install as a skill, and get an idea of how this might work for prototyping, where your paper prototype consists partly of a script. If you are creating puzzles with different languages for your escape room, your prototyping will help you discover if any subtleties of puzzle, clue or hint are lost in translation.

Digital prototypes

It's really useful to be able to have your puzzles tested remotely online, especially if you want a lot of responses very fast.

If you need the playtesters to hear audio or see videos, you can put those resources on SoundCloud or YouTube respectively, or on a dedicated wordpress blog for puzzle-testing, and use QR codes for the players to find them quickly with their mobile phone cameras.

If you are creating a coded electronic puzzle that can't be mocked up on paper, perhaps a light-switch puzzle, or an RFID positioning puzzle, or even a magnet-dependent puzzle, then you can use PowerPoint with hotspots, or an interactive fiction tool like Twine to mock up the functionality.

Again, you could combine this with a gamesmaster, and still prototype the puzzle online using a video-conferencing tool like Zoom.

If you want to simulate a lock you can use Twine, Google Forms, Password protected Wordpress posts, which can have the advantage that you record all the wrong answers entered to shed light on where the players were going wrong.

I generally create a paper prototype and then ask for volunteers in the Facebook enthusiasts groups, and use messenger to record their process and reactions.

Physical prototypes

Creating your first version of the physical elements of the game, may mean making a scaled-down version to check it works. Sometimes a prototype that has worked well sketched on paper, will develop unanticipated complexity or interference when made in 3D. Create physical prototypes as cheaply as possible before committing to the final design and build.

Playtesting the game

When you playtest the puzzles, ask the participants to verbalise their thoughts, so you can hear the whole process. This will also ensure that you know what knowledge they are bringing into the game, and what they are picking up from elements in the room. Ask the play-testers:

- How did they identify the puzzle and all its pieces – how did they know there was a puzzle to solve?
- How did they approach solving the puzzle at first?
- What did they find confusing?
- How did they solve the puzzle?
- What do they think they learned?

The story behind your game and the outcome should make sense. The motives of the characters the players discover through the artefacts they have left behind or the puzzles they created should be clear. Ideally, the players will have an impact on the game or the storyworld that will be obvious to them whether they succeed or fail. Ask the play-testers:

- What was going on?
- Whose side were you on?
- What did you have to do?
- Why did you have to do it?
- What has changed now you've succeeded?

When you have tested the individual puzzles, you can put them all together and run your **first complete playtest game**. Initially, you should allow three times the amount of time the game is supposed to run for. You are looking to see if the flow of the game works, and if any of the puzzles interfere with one another to confuse the players once they are put in the same space. You are also testing if your hints work, and if the timing is right. Adjusting the time that you give a hint and the wording can make all the difference, however you can expect to have to redesign or even edit out puzzles that just take too long. Ask the play-testers:

- Were you given hints at the right time?
- Were the hints clear and helpful?
- Were all the puzzles clearly separate, or did you mix up parts of one puzzle with another?
- Was it always clear what puzzle went with what lock, and what that would open?
- Did any of the puzzles take too long to solve?

SECTION IV

BUILDING OUT THE SPACE

Define your space

First of all, as a game designer, you need to a decide few things:

- if your space is physical (floor, wall, ceiling) or digital (applications, web platform, Zoom etc.),
- if you are building an escape room or an escape game.

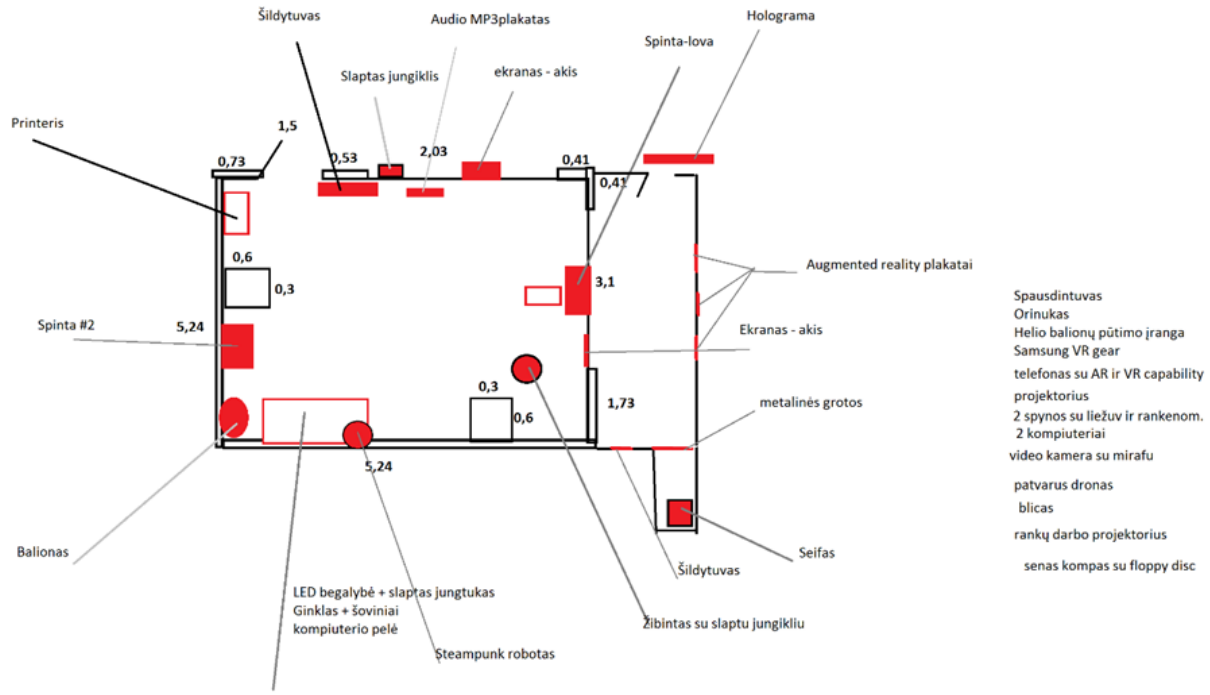
For building **physical escape games/rooms** you might have some limitations, like the ability to destroy walls or reshape furniture. On the other hand, you can always find clever solutions to create awesome escape rooms/games with limited resources. In this section we will try to uncover some of examples and main principles of how you can reshape the most difficult spaces to meet your needs as an escape room/game designer.

For **building digital space**, the only limits are your imagination and your digital skills. You can use the Zoom platform, augmented reality, scavenger hunt apps, etc. It's up to you what fantasy world/space you will create.

Measuring up and using the space

Try to get in an architect shoes and understand your space. When architects design spaces, they find something unique and valuable in building and try to use it to express the uniqueness of a building. In our case we need to measure the space, analyse all doors, exits, shapes of walls, even ceilings, and look for some secret niches which might be used for our needs.

You can even draw a scheme with some useful comments on it:



Another creative way to design and measure the space is to use a military mapping technique.

When soldiers are about to attack an enemy, they make a simple map - they put a border on a piece of land and mark all strategic objects (hills, buildings, electricity installments, roads, etc.). They use anything they can find in a forest to mark these objects. For example, the enemy barracks can be big stone and the road can be a piece of stick.

In our case to build a 3d physical space we can use anything, starting from tape, pencils, markers and finishing with cardboard boxes. When you create this colourful 3D image of your future escape room it will be much easier to build the actual game.

Furniture and construction of items

If you are building a budget version of the escape game most likely you will have even more fun, because you'll have to get creative!

Take into consideration that you have a 3-dimensional space with walls, ceiling, floor, doors, windows, and maybe some secret niches or arches.

Walls - you don't have to paint or destroy to fit your needs. Pieces of paper, notes, photos can be gently glued to the walls. In some cases, you might want to use bigger photos or even photo wallpapers to create the desired atmosphere. But be careful, don't get too confusing and put only items which are related to the game flow, otherwise, you will get participants lost in too much information.

Floor - is another space element which can be made use of for puzzles. You can use the carpet, and hide something valuable beneath it. You can mark 12 o'clock somewhere on the floor and think about all the space as a clock, or a chessboard. You can think about escape game as a board game. But in our case the board is floor, obstacles are furniture and other items, and our characters are real human beings.

Ceiling – it might be trickier to use the ceiling for your needs as a game designer. However, you can hide small text, that only binoculars can help to read. Or leave a piece of information hanging on a chain - to reach it participants will have to unlock padlocks to reach the note and unlock another clue.

Doors quite often are something special in escape games. People usually expect that it is the final step to finally finish the game. You can try tricking your participants by "playing with doors". You can install artificial door to the wall which actually does nothing and when the players open it they will find a wall and get confused. If you have some secret niches, or big furniture, your exit door can be any secret hole in a wall or a wardrobe.

Another thing to try as a game master, is to pretend that you are locking the door, but in reality, just leave the doors unlocked. Participants will play really hard just to find that they could finish the game any time they wanted just by pushing unlocked doors. It's a little bit tricky and dangerous, but worth trying at least once.

Windows might be used as a window. Again, it might be funny to hide a tiny piece of note somewhere far so only binoculars can help to read it. But in most cases, you might want to hide the windows to isolate participants from outdoor noise, light and distraction, so players can feel the atmosphere you designed. If you use dark film, you can completely eliminate any outside source of light and start playing with indoor light.

When it comes to **designing furniture** it's up to your imagination how you will create unexpected elements. You might trick participants by forcing them to think that sunglasses are just sunglasses to look at a bright lamp and to get new code. But most likely your participants will expect that these sunglasses are definitely here for something else.

Give players a pillow and expect participants to find a secret bed. But instead they will try to everything with this pillow and most likely not too many of them will think it's for laying a head on. So, when you design furniture and other elements, you have few or even more options:

- You can use it for its main purpose and in this way, you will trick participants who tend to overthink.
- You can come up with your own versions of furniture and elements to meet your needs.

You can create an infinity table, or hide a laptop in chest of drawers. Everyday objects and elements might have different functions.

For example, you can put up a simple poster, with a hidden mp3 player behind it. So, players will have to realise that they need to put earphones to a piece of paper to get another hint.

Special effects, sound and lighting

One of the most powerful elements you can use in escape game/room are **sounds and lights**.

Light and music are one of most powerful instruments to create desired game atmosphere.

Regarding **light**, if you decided to darken your game venue or are designing it for some place with no windows, then you can start your first steps as a light artist:

Table top lamps instead of ceiling lamps will create a lot of shadows and will make walls, floor and ceiling disappear. Make just this small adjustment to the game and you will create an atmosphere in which you can start telling your story and implementing a script. If you want to go further, use video projections. Almost in any classroom or office you can find a video projector. Install it in some furniture and project video and sounds which match with your story or create the desired atmosphere. You can also leave HDMI or VGA cable on the floor. Players won't know where this cable starts, but when they find a video projector and connect it, you can display anything you want. It can help as a hint mechanism or simply create visuals and lightning.

Other special effect that will make your game more vivid might be **holograms**. If you have a dark enough space, use video projection on some curtain like material, to project content on a black background. This will make something which resembles a hologram. It's not too difficult to create living portrait frame. It's fun and useful special effect. Just put your tablet in a frame. Start with a still image and at some point, let your image start moving and deliver your desired content.

Sounds can be also useful in designing a game. You can have a soundtrack for the length of the game (for example 60 minutes). As the time is ticking out, the tension is created and music gets more intense or louder. You can pre-record hints in your game soundtrack. As we mentioned before you can hide secret plugs for earphones, so the players can get engaged with sound and start solving puzzles only when they hear a particular theme or song. You can hide speakers in furniture and trick players into thinking that there are some actors hidden in furniture.

Digital elements

As a game designer you can also improve your digital skills.

Here are some examples of digital elements you could introduce into your version of escape game/rooms:

- **Video projections:** it can be wall projection, curtain holographic projection, hidden projection from some transformed furniture or niche in a wall.
- **Virtual reality equipment:** VR became cheaper and more available. Now it's wires free, so you can put goggles anywhere in the space pre-loaded with a special app, 360 environment and enrich your escape game experience with this equipment.
- **Augmented reality elements:** it might be a picture on the wall. When players point phones or tablets toward this picture it will start moving and talking to the players. You might want to use augmented reality just as a part of escape game or build the whole game based on this technology. Just look for "AR escape games" on the Internet to find examples.
- **Arduino, robotics and other digital-mechanical constructions:** Collaboration is one of most beautiful things you can find in building an escape room/game. Find somebody who works in robotics, arduino, Lego-robots and work together to create more engaging puzzles. You can install motion detectors, lasers, sound alarms, light tracking elements. With Arduino everything is possible.
- **Passwords:** Pre-load app on computer or tablet and ask participants for a password. Once they enter it correctly, they can move forward. Or you can connect the computer with a mechanical Arduino component to get more interesting outcomes. If for example, the password is correct participants will see the light turn on.

Health and safety

It's not advisable to buy fake plug sockets, or use hollowed out fans, radios, or other electrical items to hide puzzles, props or parts in. If players think they might progress further by dismantling live machinery or electronics or using a fork to lever off a power socket, that's a recipe for disaster.

SECTION V

RUNNING AN ESCAPE ROOM FOR INTERCULTURAL LEARNING

Setting up the game

Location and venue

Your game should sit well in the venue you have chosen. The more the venue and its location support the setting of your story, the easier it will be for players to immerse themselves in your storyworld.

You should look at how you can use the features and fixtures of the venue, even the view from the window, as part of your story and puzzles so that nothing jars the players back to reality if you can help it. Similarly, fixing your escape room within it's location, so that it feels real within the world, can help the players feel comfortable. This can be especially important in intercultural games where the location and even the style of the building could be new to some or all of the players.

Set dressing and props

→ Don't:

Don't have anything in the room that isn't part of your game. Players will look at anything and think it's a clue, so make sure that it is. Everything you have in the room should support the story, even if it isn't part of a puzzle. Everything in the room you should be able to create a provenance for that explains where it came from and who put it in the room.

Don't use cursive text in any of your documents for the players, as this is hard to read for those with dyslexia.

Don't laminate paper props to make them last longer, it takes away from the authenticity of your set. You can find specialist non-tear paper which you can print on and lasts a lot longer, but will still need replacing. If you only have a small number of teams going through your game, or you have enough time to reset between games, I would consider providing fresh (suitably aged and weathered) copies of each document for each team.

→ Do:

Playtest the whole room with a fresh team when it is all setup in the exact location it will be played.

Provide enough light, spotlighting, lamps and overhead lighting and if you have torches, have enough for everyone to use (or one really big strong lamp!).

Provide pen and paper, or flipchart and pens, or a boogie board for your players – consider giving enough for them to have one each. This is not just to help the players solve your puzzles and note down important names and facts, but also to preserve your props from being written on by the players.

I like to get the players opening someone else's mail. There's something very uncomfortable about unsealing a sealed envelope that makes them invest more in what they are doing.

Groups tend to be much bigger than a 5/6 person escape room team, there are several ways of changing the format so it works for larger cohorts, we have discussed six ways of changing the game shape earlier (page 14.).

However sometimes the number of players who show up on the day can be unexpected. It's important that you keep the team size as close to what you designed the game to cater for as you can. It is better to run the same game more or less often, than to put more or less people in each team. This is because you have play-tested each puzzle and the game flow for a particular number of people, and if you have less they may get frustrated and risk failure, and if you have more, they may get bored.

Briefing the players

You should complete a **risk assessment** through whatever method your organisation demands, and create a Health and Safety briefing that you give to the players. This generally covers:

- What to do in the event of a fire
- What if they think a prop or puzzle is broken or breaks
- The right amount of force to apply to the props, locks and containers.
- Any out of bounds areas or items in the room that should not be searched/touched.

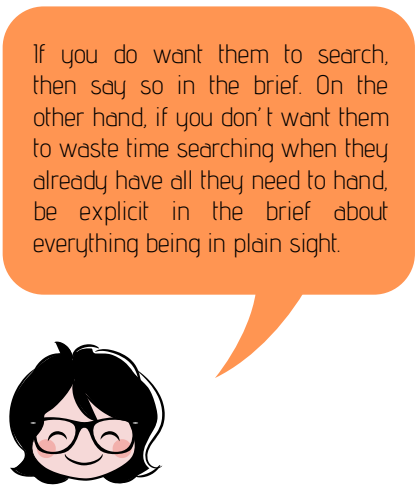
You will probably add your own items to the list as you run more games. Sometimes experience is the best teacher.

If there is any **guidance** you want to give the players so they can make the most of the game, add it to the briefing. You may also want to check they know how to open the sort of padlocks that you will have in the room.

A commercial escape room will generally never use the same item twice. So whether that's a piece of a puzzle, or a tool, once it has been used players can discard it. The usual rule of public escape rooms is that no external knowledge is needed. It is not considered fair for one team to be advantaged over another in a competition against the clock because they have prior knowledge of some puzzle elements; for example using the periodic table, musical notation or roman numerals.

An escape game designed for learning however might be written specifically to motivate the participants to research a subject for the first time, or after some pedagogic input from you to assess their recall, their understanding or even the application of their knowledge and skills as part of the game. As some of your players may have played commercial games, you should include something about your approach to this in your briefing.

Public escape rooms often have searching for items as a time-filling activity, but you should think about whether this is appropriate in your game. Ask yourself if the searching is adding anything to the learning outcomes.



In-Character mission

Once you have given the health and safety briefing, and any guidance on how to play the game, take any questions from the players, and then **the game can begin.**

This might be with you dropping into character as the person hiring the players (just turning around and putting on a hat or a lab-coat can be enough), or you might have an actor come in, or play the participants a video recording that leads them into the story, the reason they are there, and how they will know when they have won. You will also need to tell them who will be helping them, and who they are up against.

Hints and hinting during the game

Make sure that the method by which you give the hints during the game is cohesive with the game mechanic you have decided upon.

An external gamesmaster who is not part of the storyworld can work well for a game that is designed as competitive between teams, as there is a more overt acknowledgement of teams asking for answers and getting the same hints to make it fair.

Decide on how the players ask for hints, or if they are offered automatically, and brief the players on this.

Roles of non-player character(s)

A **non-player character (NPC)** is a role within the game played by a gamesmaster or an actor to maintain the narrative immersion. This can be someone who is definitely aiding the players, or someone who is goading them, but at the same time giving them hints. You can have the NPC in the room with the players, but there must be a narrative reason that the NPC can't solve the puzzles themselves, even though they will be the source of hints.

Often the NPC simply needs to direct the players focus. Simply picking up an element of the puzzle you want the players to look at next and saying something, pretty much anything, will make the players look at it. The idea is to make them feel you are just being in-character, rather than giving them a hint because they need it. "Have you finished with this?" "I wonder why this is here?", "Shall I put this away now?" are all good for refocusing.

An **NPC external** to the room can be a character communicating over a PA system, a computer terminal, short wave radio, or a telephone call away. You need to decide whether the players can initiate contact, or if it will happen only at the gamesmaster's discretion, and then test this out during play-testing.

Or you could drop hints in, appropriate to each puzzle and the story, from one of several different characters represented by a printer suddenly whirring to life, or a fax coming in, or a phone message that gets played when the players find the access code for the voice mail.

You can have **a mix** of all of the above. Goading letters Moriarty-style from the antagonist, requests for help from the protaganists, the occasional letter, fax, or even pigeon-post from a friendly ally, a crib-sheet stuck under the desk to open the wall safe. If you blend these in well, the players think they are part of the puzzle, and not a hint at all, but by triggering their discovery in the room, you are moving the players on before they get frustrated.

In a zombie game, the helper could be a lab-assistant who has been bitten by a zombie, and so can't remember clearly, but occasionally recollects something critical.

End of the game

When the players escape the room, traditionally, that's the end. Lots of congratulations and off everyone goes. However, you can have any kind of ending you choose. You can have the players escape the room, complete a mission you set, or have them create a message for the world about what they have learned by making a pledge or joining a movement.

This is aside from any debriefing that will come afterwards, it's about letting the gameworld bleed into the real world enough for the players to do something in game that has an ongoing effect. On them, on the world, on other players. Sometimes your storyline will call for the players to only find out their "real" mission once they are inside the room. They may even have to rebel against their taskmaster if it turns out the person who hired them to fulfil the mission is wrong or dangerous.

This calls for you to write a "bait and switch" brief, so that you get the players there under false pretences, and the real plot is only revealed once they have made their way into the heart of the game.

Debriefing and reflection

Kolb's Cycle of Experiential Learning

Kolb's experiential learning style theory is represented by this four-stage learning cycle in which the learner goes through each stage sequentially.

Kolb theorised that we each have a preference or learning style that means we naturally prefer one of these stages at the expense of the others. So you may have participants who light up in the escape room but once the experience is over, are in too much of a hurry to get on with "doing" the next "thing".

On another level, you might find that you can see these preferences being expressed around an individual puzzle.

An Escape Room offers the opportunity to elevate the participants' awareness of their own learning and doing preferences, and challenge them to adopt a different point of view.

Facilitator's notes and feedback

Every time your game runs, you will learn something new. This could be about the flow of the game, about how the players interpreted something you said in the brief, or some new way of solving or looking at a puzzle that gives you an insight or a need to redesign.

You should take notes during the game to find something positive to feedback to each participant.

If you have the luxury of other staff members helping out, then assign particular players to them so that participants can get personal notes after the game. The idea is to give positive feedback, even if a group needed a lot of hints to finish the game, or if the game ended without them completing their mission.

Sometimes players will go down a track with a puzzle that you weren't expecting, and they may be able to rationalise a brilliant (or not so brilliant) explanation and solution that doesn't work. Pick this up afterwards in the debrief and let the players know it was an interesting and possible puzzle, and that maybe you'll even use it in a future game.

Peer feedback

It may or may not be appropriate for you to include an opportunity for peer feedback after the game. It depends on what you are hoping to achieve with the group and the learning outcomes you expect.

It can be a great **group-builder** and a boost to **individual morale** for team-members to receive feedback from other players. Aim to keep it positive.

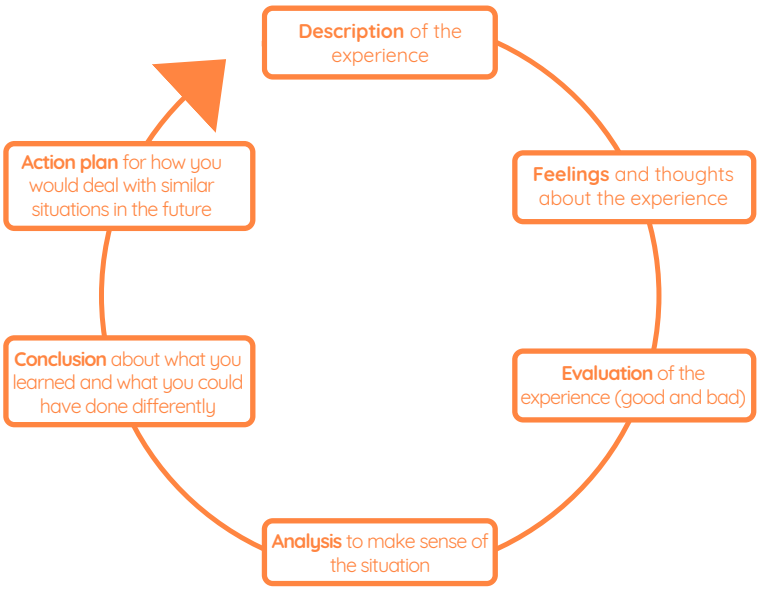
- One way to ensure that feedback is always encouraging is to ask each participant to provide another participant with "**two stars and a wish**" which means finding two reasons to give that person a star, and one wish for their future development.
- If you want to be **less formal**, simply inviting comments on "who did a good job?" and "who saved the day?" can spark the right sort of conversation.
- If you want to be **more formal**, there are several free online tools that can help with peer feedback, randomly assigning participants, and anonymising the comments.

Consolidating learning and action planning

It's important to discuss the game and the participant's experience to ensure that the learning objectives you designed into the experience have resulted in the learning outcomes expected. Are the participants now able to demonstrate their learning in an appropriate way? The richness of an escape room learning experience may require some processing, both immediately after the game and later on.

Escape Rooms are an excellent format to introduce the concept of reflection, becoming a reflective practitioner and more broadly around the adoption of a growth mindset, as well as intercultural communication and cultural bias.

Gibbs' Reflective Cycle is a useful model to take participants through the process of reflection. They will not so much be considering the learning content of the game, but the learning context. This speaks to the "Self" level of learning introduced earlier.



1. Describe the experience, use who what, when, where, how and why.

2. How were you feeling? What were you thinking?

3. What was good and bad about the experience? What went well, and what didn't?

4. Why did things go the way they did? What can you learn from it? What do you need to know to make better sense of it?

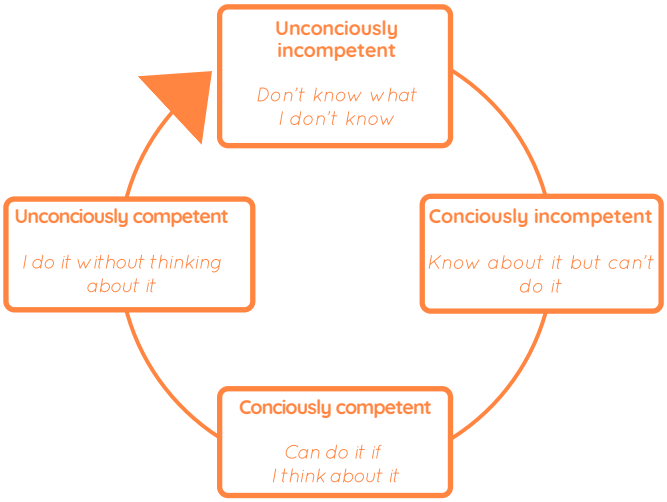
5. What did you learn from it? How could it have been a better experience? What action could you take to improve?

6. What will you do to ensure that next time my skills and behaviour bring about a better outcome?

Conflicts resolution

It is possible that during the game, or during the reflection, some deep emotions are stirred in the participants. If facilitators are to successfully help players discover and acknowledge their own biases, the players will be challenged by the game to consider their actions, their attitudes, their assumptions and their behaviour. This may make them **uncomfortable**.

Broadwell identified each of the four stages of learning, including this uncomfortable stage of conscious incompetence, as necessary parts of the learning process.



In an atmosphere of fun and friendliness with the intention of unconditional positive regard, the game can be a meaningful learning experience that will change participants for the better. However, it is possible that if players feel that their values are being questioned or challenged that they begin to feel attacked or defensive and conflict ensues. This might manifest in a number of ways including raised voices or disengagement during the game, or as sullen withdrawal in discussions around the reflection.

Escape Rooms to some extent always aim to frustrate. Eustress is a positive reaction to stress that generates a desire to achieve and overcome challenges. This is exactly what we want to encourage in an escape room, the sort of positive stress that leads to communication, looking at things differently, and generating new solutions.

However, tempers and nerves may get a little frayed against the clock, aside from any deep learning around bias and stereotypes. There are two main types of negative conflict:

- **Substantive conflicts** arise over things such as goals, tasks and the allocation of resources. In an escape room context these conflicts might arise over who gets to hold the one UV torch, or who opens the lock, or anxiety caused by the time running out.
- **Emotional conflicts** arise from things such as jealousy, insecurity, annoyance, envy, or personality conflicts. This sort of conflict may occur if someone is seen to be "hogging the puzzles", or to be not concentrating enough on the task at hand, to the annoyance of a more competitive player. It is emotional conflict when two people always seem to find themselves holding opposing viewpoints and find it difficult to hide their personal animosity.

Different working styles can also be a cause of emotional conflict – so one player may look at a puzzle and solve it using their own learning preference, whilst another player is frustrated by, for example, someone wanting silence to listen intently to a soundtrack they themselves had not yet noticed. Recognising whether the conflicts are emotional or substantive can indicate to the facilitator how best to resolve the situation. People can manage conflict in different ways, and sometimes each of these is appropriate.

- **Avoidance** – going off to do another puzzle or withdrawing.
- **Dominating** – pushing their way through.
- **Compromising** – putting forward a plan to try both possible solutions, or dividing up the puzzles that need to be done amongst the group – separating the conflicted pair.
- **Accommodating** – conceding that someone else should try first, or a different solution.
- **Collaborating** – actively helping with solving a puzzle one way, in order to move faster to trying a different proposed solution.

This methodology is not the place for a long discussion of conflict resolution, but it is important to point out that these issues may arise, and to some extent are intended to arise as part of the learning process, whether during the game, in the reflection afterwards, or even later on as the learning is consolidated.

Gamemasters must be prepared to resolve conflicts, and facilitate their players to resolve conflict as part of the process.

In a escape game linked to intercultural approach, some exchanges might occur among participants during the game or during the debriefing on topics about stereotypes and prejudices, and even about participants' experiences or *a priori*.

To us, it seems important to inform the facilitators and to invite them to continue the exchanges while including clarifications so the participants can be listened to and can reflect about their opinions and their stance. Some individual exchanges can also be relevant. The "*T-KIT 4 « intercultural learning » second edition*" published by the Council of Europe and the European Commission in 2018 gives some definitions;

"Stereotypes are generalised, oversimplified or exaggerated beliefs about a group of people. A stereotype is " an image in our mind" , that determines how we come to hold certain beliefs about a person, just because that person belongs to a certain group. A stereotype is not a category, but a fixed idea or belief about that category, a cognitive representation of a social group and its members. Stereotypes are born from the need to categorise the world into clear and simple groups. Categorisation saves time in processing information, satisfies the need to understand and predict actions and makes people feel better about themselves (since usually they think their group is better than other groups). At the same time, this simplification of the world leads to a partial and inadequate understanding of it. When we base our perception on stereotypes, we categorise others based on a few easily identifiable aspects and we believe that most people in that category are similar to each other, but dissimilar to people in other categories. The stereotype acts as a filter of information and attributes a standard of behaviour to all members of a particular group, triggering prejudices and blocking the possibility of a real dialogue between members of cultural groups that perceive themselves as different."

"Prejudices are negative attitudes of rejection towards the members of a group, based on the simple fact that we see them as belonging to that group. One can be prejudiced against someone based on characteristics such as perceived race, gender, ability, ethnicity, nationality, religion, age, social status, sexual orientation, etc."

"While stereotypes are cognitive structures and prejudices are attitudes based on value judgments, discrimination refers to behaviour. It is an unfair behaviour towards the members of a group, based on the prejudices that exist towards that group. There are different types of discrimination:

- Direct discrimination – Policies and behaviours that intentionally differentiate by cultural belonging and harm certain groups.
- Indirect discrimination – A standard that apparently is neutral, but in fact the ones who use it are aware that a specific group cannot conform to the standard; for example, a certain dress code that is either too expensive for some socio-economic groups or is not in accordance with their religious practices.
- Structural discrimination – A complex form of discrimination in which the state institutions and structures fail to provide adequate services and equal opportunities to people because of their cultural belonging. It persists because state institutions fail to recognise and address its existence and its causes and do not act to repair the historical injustices that were carried out towards specific groups of people."

SECTION VI

SHARING SUCCESS

If you would like to contribute your game as a full game that others can use, or share a case study of how your game went in practice, we can upload the resources to **www.escapeyourstereotypes.eu.** All games will be made available as Open Educational Resources.

Use the hashtags #escapeyourstereotypes and #erasmusplus #escaperoom on Twitter, Instagram and Facebook to reach the wider community.

Please email Liz at l.cable@leedstrinity.ac.uk if you would like to feedback on this methodology, or have any comments or suggestions.

Email anyone of us if you would like to feedback on the Escape Your Stereotypes project.

ESCAPE YOUR STEREO - TYPES

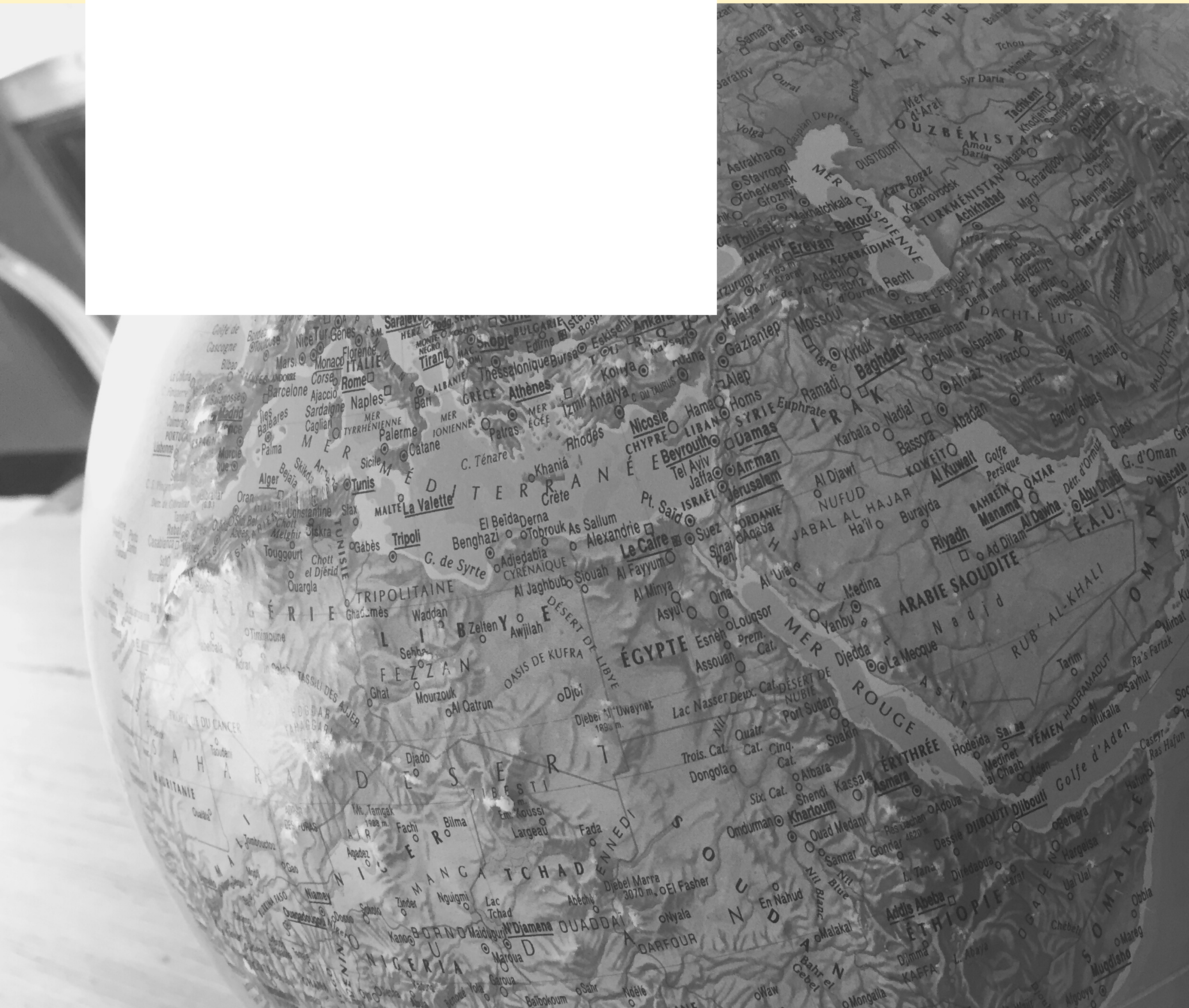
Contact us:

Marilou BREDA, France:
mbreda@associationodyssee.fr

Liz CABLE, UK:
L.Cable@leedstrinity.ac.uk

Audrius LAURUTIS, Lithuania:
kuryboslab@gmail.com

APPENDICES



ÉGYPTE
ARABIE SAOUDITE
MER ROUGE
Le Caire
Alexandrie
Baghdad
Tripoli
Tunis
Athènes
Rome
Naples
Riyadh
Nicosie
Beyrouth
Jérusalem
Khartoum
Addis Abeba
Djibouti

Escape room design worksheet

LEARNING DESIGN

- Audience (age, prior knowledge, familiarity):
- Learning objectives:
- Learning outcomes:
- Setting:
- Social:
- Story:
- Skills:
- Strategy:
- Simulation:
- Self:

Escape room design worksheet

NARRATIVE DESIGN

- Storyworld description:
- Missions:
- Submissions:
- Final goal:
- Setting:
- Protagonist:
- Antagonist:
- Who are the players?
- What's the date?
- Prop and sets dressing:

Escape room design worksheet

GAME MECHANICS DESIGN

- Team size:
- Game length:
- Venue:
- Hint mechanism (if any):
- Containers:
- Padlocks:
- Game flow diagram (appendix):

Escape room design worksheet

GAME MECHANICS DESIGN - GAME FLOW DIAGRAM

Escape room design worksheet

PUZZLE DESIGN DOCUMENT - replicate as much as needed

Puzzle n°

- Learning objective(s):
- Learning outcome(s):
- Lock type:
- Solution:
- Container:
- Elements:
- Methodology:
- Hints:
- Min to Max solve time:
- Improvements:
- Variations:

ESCAPE YOUR STEREO - TYPES

#EscapeYourStereotypes

www.escapeyourstereotypes.eu