A Guide to Designing Educational Escape Rooms with Educational Technology

A GUIDE TO DESIGNING EDUCATIONAL ESCAPE ROOMS WITH EDUCATIONAL TECHNOLOGY

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INTRODUCTION

Do you love escape rooms? Love the thrill of solving complex problems and successfully escaping the challenge and feeling smarter than you ever did? Why not bring this experience into the classroom or staff meeting? But maybe you don't know where to begin and the task can seem daunting.

After creating numerous escape rooms I wanted to share my experiences with others by creating this guide to walk you through the steps on how to create an escape room using educational technology tools your institution already has without costing a fortune. Imagine using an escape room as an ice breaker on the first day of class to get students to go through the course syllabus or learning management system and actually find important due dates on assignments? Or use an escape room to review concepts before an exam? Perhaps you've created a very large but very important document for your staff and want to ensure they read it-wouldn't it be fun to get them to do an escape room so they actually read through the document? The sky is the limit!

PART I
JUSTIFICATION FOR ESCAPE ROOM

Before we begin, let's start with some justification for why an escape room is an appropriate activity for teaching and learning. This may seem strange to consider, but after running several escape rooms at my institution I encountered management that raised questions about the educational implications of escape rooms and whether they were a valid form of learning. Since you are reading this book, you are likely already on board, but you may also encounter colleagues or management who may not feel the same way.

Here are some top reasons why escape rooms are a great strategy for teaching and learning:

1. **Enhancing engagement:** An escape room can create an immersive and engaging learning experience. These elements add excitement and intrigue, and encourage active participation from all students.

2. **Promoting problem-solving skills:** The use of puzzles and clues within the escape room encourages critical thinking and problem-solving skills among students. It challenges them to collaborate, strategize, and think creatively to unlock clues.

3. **Interactive and memorable learning experience:** The escape room concept provides a hands-on and interactive learning experience. Students can directly engage with the content in a fun and memorable way, fostering deeper understanding and retention of teaching methodologies.

4. **Team building and collaboration without knowing it's group work:** Students often hate group work, but an escape room disguises the negative connotations of group work into something more light hearted. Collaborative efforts are needed in solving escape room challenges. By participating in this activity, students can strengthen teamwork and collaboration skills, which can be adapted into other team group activities.

5. **Innovative teaching tool:** In this guide, we'll be going over ways to integrate educational technologies into escape rooms which allows students and faculty to become more familiar with new and existing education technologies. The activities can be easily adapted to using any technology your school has!

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PART I
DEFINE LEARNING OBJECTIVES

Like any course, you need to define the learning objective of this escape room. What is the purpose of the escape room? What do you want your learners to take away?
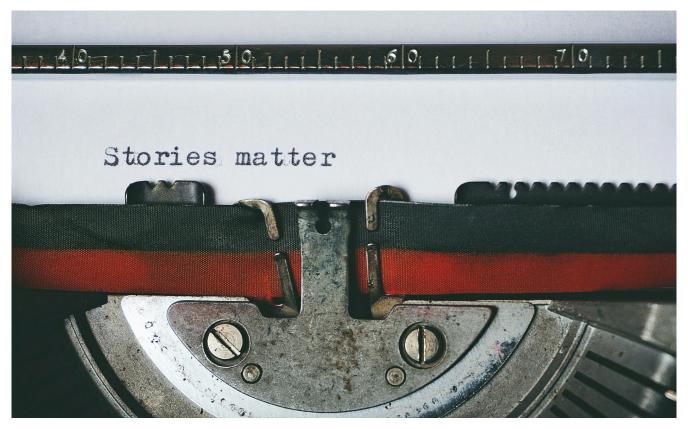
Here are some examples

- To clear misconceptions on ChatGPT and generative AI

- To understand the course syllabus and note important dates and resources
- To review course content to prepare for an exam
- To learn fun facts about your university to welcome new faculty and staff
- To review year end report by the university

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PART I
CHOOSE A THEME AND STORYLINE

A good escape room needs:

1. A fun theme and storyline (e.g., popular movie, scientific, historic, or course specific theme)
2. Time limit to add a sense of urgency

Here are some examples:

- Your team was studying too late in the library and fell asleep. Suddenly you've woken up and

it's the next day and your team has an exam in 10 minutes! The library is still closed so your team needs to escape quickly to make it in time for your exam. One of your teammates reminds you that the library used to be an old mine and there is an escape route but be careful there are also traps!

- You were watching a movie in the hallway and realize the school closed and you are locked inside. Suddenly you see something shiny in the wall and realize it's gold. You remember that this school used to be an old bank and maybe the rumours of gold being hidden are true. You see the alarm system has 15 minutes before it goes off so you better find your first clue!
- You and your teammates are spies on a secret mission, and you have 8 minutes to get the secret code to stop the world from exploding.

Your storyline will be the basis for your clues so think of something fun, personal, and creative!

PART I
LOGISTICS AND TECHNOLOGY

Before we design the questions, think about how you want the escape room to unfold and the type of environment the escape room will be in.

Will it be:

- In person
- Online
- Synchronous
- Asynchronous
- A mix of these components
- Completed individually or in groups

Once you determine how the escape room will be delivered, consider the amount of help you need to facilitate the escape room and whether it is feasible. If you've ever watched the show the Amazing Race or Survivor, you'll notice contestants have to get every puzzle and answer checked before moving on to the next stage. This can be very time consuming, so think about how technology can help with this!

Tech tool inventory:

Take an inventory of the online tools you have available to you. You'll want a tool that allows you to automatically grade the responses from learners and have different types of responses such as multiple choice, fill in the blank, short answers, etc. The tool should also have an "after submitting" response that allows you to enter in text for the next clue. You can use your learning management system's quiz tool, Google Forms, survey tools, etc. A personal favourite of mine is H5P, and eCampus Ontario has a H5P studio allowing you to reuse activities generated by other Ontario educators and create one yourself using their tools. [Check out the H5P studio here.](#)

Find your tech fit:

Now take a moment and consider how comfortable you are with using tech tools. If you clicked on the H5P studio, you likely saw a huge list of potential tools and that can be very overwhelming! You want to begin with something you are comfortable with so you can create your escape room and focus on the content rather than the tech tool. This could be incorporating just one tech tool to begin with and that could be enough! As you get comfortable with creating escape rooms or plan on creating an updated version of your first escape room, you can then incorporate more tech tools and physical tools to make your escape room more elaborate.

The basics

You could make the entire escape room online as a series of questions similar to a practice exam but have students complete it in groups and have a prize at the end for completing it the fastest. You could use the online exam format present in your school's learning management system, or a survey software that allows you to manage correct and incorrect responses such as Google Forms, H5P, or Qualtrics. Ask around at your institution to see what is available and easy to use. *Note: To increase accessibility, consider printing the questions so students have an option to read it on paper but have at least one student have a device to electronically submit answers.*

Get moving

Add on to the online assessment format by using QR codes for each question and place them around the room at different tables or walls. After the correct responses are submitted, have a message that instructs students on where to go next. This can be as easy as finding the next QR code with a number or letter above it, or adding some even more clues for them to solve to identify the next QR code.

Add in some additional puzzles like combination locks and keys

If you've been to an escape room, you may want the full treatment, the puzzles, the locks, hidden keys, and invisible ink. This adds another layer to finding the QR codes to the questions students need to solve. Perhaps students need to answer 3 questions to get 3 numbers for the combination lock on a box. Once the box is opened, they get the next clue or even a key to another lock! These additional locks do not change the learning outcomes of the escape room but add even more fun for students.

Full escape room but contained at tables

If coordinating a large class running around from one table and wall to another sounds too chaotic, consider making multiple sets of the escape room and putting them in boxes or envelopes for each table. This way everyone experiences the same questions, code cracking, and excitement. Think about starting with a large box, and then smaller boxes, locks, and envelopes containing QR codes to reach the final puzzle.

Final prize

Although the goal of the escape room is to escape in time, think about a small prize students can win for cracking the final clue. This could be stickers, small party favours, fidget items, candy, etc. Something small but that they can get excited about that won't break the bank.

PART I
DESIGN YOUR PUZZLES AND CHALLENGES

With your learning outcomes, theme, and storyline in hand, you are ready to create your puzzles. Start by thinking of key information you want your learners to gain (i.e., the answers).

Here is process I go through but feel free to use the process you use to create your regular quiz or exam questions. You could even take the questions straight from your quiz or exams! Since I am an instructional designer by trade, I use a backwards design starting with the answers and then moving towards the design of the overall escape room.

1. **Answers:** Using the learning outcomes as the guide, I identify all the key answers and concepts that will demonstrate learners achieved the learning outcomes.
2. **Think about hints:** I note where the answers are located such as on a website, textbook, or if learners have to come up with the answer themselves like on an application type question. This step will help me

write down "hints" for learners later on.

3. **Design questions:** I create the questions and consider the format I want the responses to be in, for instance multiple choice, fill in the blank, true or false, categories, etc.

4. **Technology tools:** I look through the technology I have available to see whether the format I envision is available but I also consider other formats the tool may offer that would make the questions more interactive, for instance a drag and drop activity, or an advent calendar to find a date.

5. **Create questions and answers in technology tool:** I create the question and response in the chosen tool.

6. **Flow of questions:** I take an overview of all the questions and activities and think about the flow and order learners should answer these questions. Maybe you want to start with content from Chapter 1 and then move in chronological order to build off of the previous responses. Or perhaps the order does not matter and you want to focus on doing easier activities first and then increase the difficulty or even vice versa. I've put in some more difficult questions upfront to set the tone of the challenge, and then make the questions increasingly easier as the pressure of running out of time will be setting in.

7. **Add storyline to questions:** Once I have the order figured out, I go through and edit the questions to fit with the overall storyline and theme. Sometimes I'll ask generative AI for whimsical ways to make the questions more fun like the mysterious questions you find in real escape rooms.

8. **Check order of responses:** At this point, I return to the questions and change the "feedback" or after response text to lead learners to the next clue in the right order. This could also be a clue to finding a hidden key or a number for a lock combination.

9. **Generate QR codes:** I convert all of the questions into QR codes using H5P KewAR Code

Decoys: Want to make things even more challenging? Add in some decoy clues. This could be QR codes or hidden paper messages that give hints or to keep looking for the next clue!

PART I
BUILD YOUR ESCAPE ROOM AND TEST IT!

Now that you've created all of your questions, it's time to put it altogether! Print paper copies of the QR codes, questions, hint, and decoys. Gather your locks and keys and find items that you can lock. Since I'm on a very low budget, I bought small gift card boxes and punched holes through them. I put locks through the holes and taped up the other side of the box. If the clue is too big or the box, I'll use envelopes or even hide the clues under the table or another object. Recently I started to use invisible ink pens to write the correct order of the clues. It's not necessary but adds a fun element.

Before implementing your escape room, be sure to pilot it with a small group of friends, family, or colleagues! You want to work out any bugs, clarify confusing aspects, and ensure everything runs smoothly.

Tip: I found the most challenging part has been how the locks work. Locks are all different, so before beginning the escape room, show everyone how the lock numbers need to be lined up and how to open them.

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PART I
CREATE AN ESCAPE ROOM MANUAL/ GUIDE

Now that you have completed your escape room, create a manual or guide for yourself and other facilitators. This manual should include all the steps for setting up your escape room, the materials, tools, the order of the clues and answers, any hints you may want to provide, and any back ups for when the clue goes wrong such as QR codes not working and having a paper copy of the questions. If you have assistants who will be helping out, be sure they are familiar with the manual and all the steps. You want to ensure your escape room runs flawlessly! Or at least as flawlessly as possible.

NEXT

PART I
EXAMPLE OF ESCAPE ROOM WITH H5P ON CHATGPT MISCONCEPTIONS

Here is an example of an escape room I created using H5P tools

Define learning outcome

To learn about misconceptions with ChatGPT and generative AI

Theme/ Storyline

You and your team were working late at school and realize you've been locked inside! The only way to escape is to follow these clues to enter in the three digit security code. By the way, the air system will only be on for 10 more minutes so you better hurry!

Logistics and Technology

Groups were provided with 3 sealed envelopes, an invisible ink pen with light, and a small box with a combination lock inside. Invisible ink was used to write the order of the envelopes to open which is revealed by shining the invisible ink pen light on the envelopes. Each envelope had one clue which contained a QR code that linked to the H5P puzzle and paper copies of the questions were also inside the envelope to allow all members of the team to see the question. Groups would scan the QR code and enter in the response. Once they solved the puzzle correctly, put up their hands and the facilitator would check they got 100% correct on their feedback and then gave them their next clue. The box with a lock contained a fun party favour. For this theme I provided small party crackers that participants pulled together to "snap" and make noise indicating they escaped the room. You could use any small party favour such as whistles, glow sticks, etc.- make it a fun surprise!

Creating QR codes

I used the KewAr Code tool in H5P to create QR codes for all of the H5P tool links

Explore H5P tools

Take a look at all of the tools in H5P to give you some inspiration in what you could use for puzzle formats. Here is the link of examples and documentation on how to create and use them.

Escape Room Puzzles

Clue 1

Printed on paper: To find out the first number for the combination lock you need to sort facts and misconceptions about ChatGPT in this drag and drop activity. (The link is provided as a QR code on the paper. Correct answer leads to the first lock code)

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Clue 2:

Printed on paper: To find the next number recall when the next event we are hosting is. Here is a schedule of next month's events, which one holds the clue? Click the correct answer on the advent calendar (The link is provided as a QR code on the paper. A calendar is printed with school events listed on various dates. Correct selection of date leads to second lock code)

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Clue 3

Printed on paper: Lock code is 3. To find the next number, test your knowledge on generative AI. (The link is provided as a QR code on the paper. Correct answer leads to third lock code).

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Locked Box

Printed on paper: Congrats you escaped! Here is your prize! (I put calming stickers in the box which participants can stick on their laptop, notebook, phone, or desk, to have a calming effect when they trace the shapes of the stickers with their hands.)

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PART I
SHARE YOUR IDEAS!

Looking for more ways to use escape rooms in your teaching? Or perhaps you've created one or experienced one and want to share with us?

[Using this Padlet, add in your ideas to inspire others!](#)