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OUT OF THE DARK: ASTRONOMY AS UNIFYING THREAD FOR CULTURES.



Escape room of Astronomy

Introduction

An Escape Room is a game that consists in locking up a group of people in a room, from which they will have to leave, before a certain time, passing a series of tests. Its origin lies in online video games, from where it came out to become real experiences. Nowadays it is very used as a leisure activity. More recently, it is being incorporated into the classrooms. In this way, it has become a gamification technique, through which the cooperative work of the students is fostered.

The educational use of an Escape Room implies the learning of curricular contents in a gamified context that increases student motivation and, therefore, improves the quality of learning. In addition, it is a very valuable instrument to develop team work, so essential to train the citizens of the 21st century.

In the following image, the characteristics of the game and its phases are synthesized. In our case, we have turned a classroom into a spaceship that has landed on Mars in a pioneering space mission, from which participants, turned into astronauts, must leave before they run out of oxygen. For this, they must overcome a series of team challenges.



ESCAPE ROOM

Aplicada en educación

Espacio creativo de aprendizaje

es multisensorial
fomenta la creatividad



que motiva a los estudiantes para ser activos y encontrar sus estrategias y respuestas está centrada en el educando

centrada en el educando

¿Qué es?

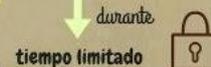
Juego grupal



de resolver acertijos y realizar tareas



durante tiempo limitado



para lograr salir de un espacio en el que están encerrados



promueve

- Cooperación
- Resolución de problemas

Para crear una Eduesc@peroom:

Define cómo es el grupo destinatario.

- Número, edades, interacción entre ellos, particularidades de cada uno, etc.



Indica cómo salir de la habitación

- Qué motivos, acciones o situaciones hacen que se pueda salir del Game room



Indica cómo se gana

- Tiempo del que se dispone para salir del Game room.



Fija los objetivos educativos y propósito

- Conocimientos previos
- Qué han de explorar, practicar, comprender, etc.



Niveles de complejidad

- Añade desafíos aumentar la complejidad del juego.



Define recompensas

- Cómo recibirás a los estudiantes tras la salida, tanto a ganadores como a los que no lo consiguieron.



Define el tema

- Es la base le entorno de la escape room
- Debe ser transversal a toda la experiencia



Define el flujo de juego.

- Determina las formas de llegar al final.
- Todos los puzzles deben conducir al aprendizaje
- Intercala puzzles cruciales y no cruciales



Evalúa tu escaperoom

- Aprendizaje obtenidos
- Relación con los objetivos
- Medición de los aprendizajes



Construye la narrativa

- Su estructura es la que articula el proceso de aprendizaje.
- Qué emociones se experimentarán.
- Qué se tiene que hacer (resolver, escapar, ayudar, encontrar, etc.)



Diseña los puzzles

- Son los desafíos que se resuelven con la ayuda de pistas.
- Conéctalos con la historia.
- Necesitan información antes de resolverlos o durante el juego.



Delimita contenido de cada espacio de la estructura:

- **Pregame room** --> Introducción de la historia y explicación de normas.
- **Game room** --> Espacio donde se juega.
- **Monitoring room** --> Monitorizar el juego y dar apoyo si se requiere.
- **Debriefing room** --> Reflexión de lo sucedido y recopilación de aprendizajes.



Diseña el núcleo del juego.

- Debe motivar y animar para llegar al final.
- Usa materiales diversos, recuerda que es multisensorial.
- Elige diferentes tipos de tareas (por estilos de aprendizaje, atributos y personalidades).



¡A jugar y aprender!

Referencia:

Quilez Peña, Javier (s/f). EDUESC@PEROOM Tutorial. Looking at learning en <http://lookingatlearning.eu/L@L/IO2.b.Tutorial%20-%20Spanish.pdf>

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Materials

The materials needed in an Escape Room are divided into two types, those necessary to set the room according to the theme chosen; and those referring to the tests or challenges that the students will have to overcome in order to succeed.

A) Materials to transform the classroom into a spaceship:

- Cartons of 60 x 50 (the number will vary according to the dimensions of the classroom)
- Continuous paper of various colors: silver, black and white
- Cartons
- American ribbon of various colors
- Silver color spray paint
- Posters of Mars
- Shelving
- Tables (two small and one large)
- Computer with screen and speakers
- Thumbtacks and nails

- Glue and scissors
- Lunar module model

B) Materials for the tests:

- Chests (4) with three-digit code
- Book chest with key
- Mirror
- Puzzle with code pig pen
- Hobbies
- Mathematical problem with specular writing
- Drawings of planets in the Solar System
- Wooden pieces with letters and numerical value
- Two sheets of fictional newspaper

Procedure/Method

We will divide the process into three phases, one prior to the game, one of the game itself and one last, subsequent to it.

1. Previous phase or Pregame Room.

Before playing, you have to take a series of steps:

1.1 Define the theme, educational objectives and curricular contents.

In this case, the chosen theme is Astronomy, in coherence with the Erasmus project "Out of the dark".

The educational objectives are the following:

- Encourage collaborative work in small groups.
- Develop the scientific-mathematical competence.
- Solve problems cooperatively.
- Motivate students to overcome difficulties.
- Use appropriately scientific or specific terms related to astronomical phenomena.

- Reason and seek a collaborative response to get the achievement of goals.
- Mobilize the capacity of initiative when facing challenges.

The specific curricular contents that are worked through this activity are the following:

- The solar system and its planets.
- Planning of the problem solving process.
- Operations combined within tegers.
- Rule of three simple direct.

1.2 Build the narrative.

An experience like the Escape Room needs a narrative context to get the participants to find a meaning to the activity and, therefore, to fully immerse themselves in it.

In this case, the story leads the participants to join the crew of a spacecraft that has made an emergency landing on the surface of Mars. Due to this, the oxygen inside the ship is lost little by little. Astronauts must leave the ship before it runs out. They will only have a certain time to get out to the base established on the Martian planet and save their lives.

1.3 Design the tests and limit the time.

The tests are four and have been designed to develop different skills. The game time is 35 minutes. The calculation of the time has been made taking into account that a teaching hour is 50 minutes. We need about 5 minutes before starting to give the instructions, and another 10 minutes later, for the evaluation and relocation of the classroom.

a) First test: planets of the Solar System.

It is about ordering the planets of the Solar System, in such a way that the initial letter of each of them, in English, corresponds to a number, according to their position in the alphabet. Adding all the initials, you get a numeric code of three digits, to open the chest No. 1. This test could be done even without establishing the correct order of the planets. Therefore, it is recommended to modify this test giving negative whole numbers to some of the planets. Thus, it is achieved that the participants must know the correct order of the planets of the Solar System to overcome the challenge.

This is the simplest test, so it goes first.

b) Second test: puzzle.

Inside the chest No. 1 there is a series of puzzle pieces, which together show a number written in code pigpen, necessary to open the chest No. 2. It also includes the key to decipher that code. To make the challenge difficult, some pieces are distributed by the ship, another part is placed in the upper tray of the chest, and others in the lower part of it.

c) Third test: mathematical problem in a mirror.

Inside the chest No. 2 there is a mathematical problem that must be solved in two steps, first with a change of units in the sexagesimal system and, second, with a rule of three direct simple.

To make the challenge difficult, the problem is written upside down, being necessary to use a mirror located in the ship. The result of the problem will give us the code to open the chest No. 3.

d) Fourth proof: astronomical pastimes.

Inside the chest No. 3 there is a key, in the upper part, and pieces of scrabble type in the lower part. The key serves to open a book-chest that is camouflaged on a shelf with other books. Inside there are the sentences of the hobbies, as well as the mathematical expression that must be used to obtain the code, after the correct placement of the pieces of the hobby.

On the other hand, the cells that form the hobbies are drawn in a table, which is strategically placed next to the book chest.

To facilitate that all the words of the hobbies can be completed, some sheets of a fictional newspaper on astronomy news are placed on the ship in which reference is made to said words.

In this way, to complete the hobbies and obtain the code, it is necessary to have three resources; the pieces of the interior of the chest No. 3, the statements and the formula of the interior of the chest-book, and the support of the hobbies. The code opens the last box containing the key to the ship's door.

1.4 Transform a classroom into the game room.

This is the phase that takes more time. It is about decorating the classroom as if it were a spaceship. Below we include some photos of the construction process:





Alter several weeks of work, the classroom was prepared:





2. Game phase or Game Room

Once a group of students has been formed, preferably with 4 components, they are given the basic instructions to start the game. The use of mobiles and any attempt to open the chests by trying numbers at random must be expressly prohibited before accessing the ship.

Once inside the ship, we begin by observing the video message of the astronauts, starting the count down. From this moment, the teacher with draws. While the game is developing, the role of the teacher is to observe and render help only in the event that the group is completely blocked and unable to advance on its own.

3. Later phase or The briefing Room

Once the game time is over, a few minutes are spent exchanging impressions with the participants. They will be invited to reflect on the group's performance.

To deepen the evaluation, it is advisable to use a questionnaire or a rubric that assesses the cooperative work carried out during the experience. The questionnaire would serve as a self-evaluation and the rubric would be a valuable instrument for hetero-evaluation.



The winner transnational Erasmus team

Webgraphy

<https://escueladeexperiencias.com/escape-room-integrarlo-aula/>

<https://www.educaciontrespuntocero.com/noticias/montar-un-escape-room-clase/92089.html>

<https://redsocial.rededuca.net/escape-room-educativo>

<https://www.agorabierta.com/2018/03/escape-room-educativo/>