

## Cell EXPLORERS final year student research projects 2022

**Title:** Evaluation of the Cell Explorers' Escape Room  
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**Project time:** Academic year 2021-22, semester 2

**Escape rooms are games** in which participants, often in a team-setting, **work together to solve a series of puzzles** within a time-frame. This project aimed to pilot the Cell EXPLORERS' Escape Room (CEER), which comprises a series of puzzles based on molecular and cellular biology.

The room was **evaluated according to key criteria** related to its function as both a Cell Explorers' programme activity, and as an escape room game. Evaluation data collected included observation notes (taken by facilitators during gameplay), and a questionnaire completed by participants before and after playing the CEER.

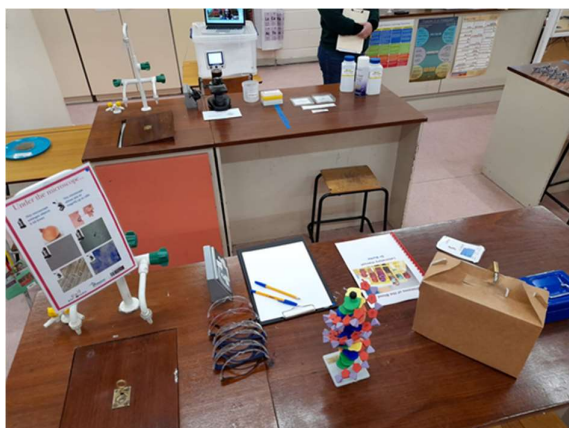


Figure 1. Picture of the CEER set up in a classroom

Analysis of the data indicated the potential of the CEER as a science engagement activity. **The CEER offers an immersive experience to its players via a teamwork-centred puzzle-solving game.** The game can be run in a secondary school classroom, allowing engagement with a wide range of participants.

The game **provides participants with an opportunity to engage with scientific equipment** and activities which simulate real science experiments. This opportunity is particularly impactful, with many participants enjoying and learning from the hands-on science activities in the room. **Regardless of self-reported scientific knowledge, all pilot participants could complete the game**, indicating its accessibility as an informal science engagement activity.

The findings from this evaluation point not only to the game's potential use as an activity for the Cell

### Key findings from the Cell Explorers' Escape Room

#### The CEER provides an opportunity for teamwork

**74%** of participants agreed that teamwork was needed to complete the games  
**58%** of participants said teams of 4 or 5 were best



#### The CEER provides an opportunity to engage with authentic, hands-on science

**11** students Listed the authentic, hands-on science experience as their favourite element of the puzzles  
**79%** Of respondents Felt they learnt science-based skills from the room (e.g., pipetting)



#### Top 3 puzzles:

1. Pipetting
2. Chromatography
3. DNA puzzles

#### Top 3 learning outcomes:

1. Pipetting
2. NaOH
3. Teamwork

The practical elements in the room are both **enjoyable and impactful**

#### The experience playing the game differs depending on self-reported scientific knowledge and scientific interest

**100%** of participants could complete the game

Participants with low self-reported scientific knowledge **could complete the room** at the same pace as participants with high self-reported scientific knowledge

Participants with low self-reported interest in science **enjoyed the game less** and found the game **less interesting** than participants with high self-reported interest

Figure 2. Key findings from the CEER Evaluation. The escape room was evaluated using data from questionnaires completed by participants (n = 46) and observation notes provided by facilitators of the pilot.

Explorers programme, but also provide further insights into the potential of escape rooms as activities in informal science education and engagement.

On a personal note, I really enjoyed completing this project. The opportunity to both facilitate and evaluate the CEER **gave me the opportunity to see the two key elements involved in 'action research'**. While the analysis of the data using Excel was challenging, my data analysis and visualization skills are now greatly improved. The members of the Cell Explorers' team were incredibly helpful and welcoming, and ensured I was fully integrated into the programme for the duration of my project.

**I highly recommend engaging with the programme** if the opportunity arises, as the personal and professional benefits available are immense.