

ESCAPE THE PLANE

A STEREOCHEMISTRY EDUCATIONAL ESCAPE ROOM

DANIEL ELFORD*, SIMON J. LANCASTER, GARTH A. JONES
DEPARTMENT OF CHEMISTRY, NORWICH, NR4 7TJ

Motivation and Design

The design of an immersive team activity to evaluate participant knowledge of inorganic stereochemistry concepts, and develop soft skills!

Objectives

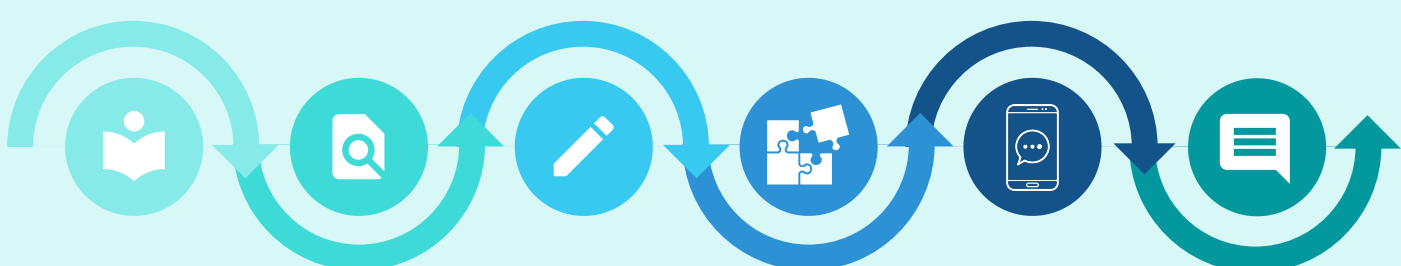
The learning objectives (LO), soft skills, and whether the activity is solo / multidisciplinary

Puzzles

The puzzle design (and how they tie into the LOs), any clues / hints required

Evaluation

Pilot testing, evaluation, reflection of LOs, feedback, and improvement of design



Participants

Identifying participants, the allotted time, difficulty and scale of the activity

Theme

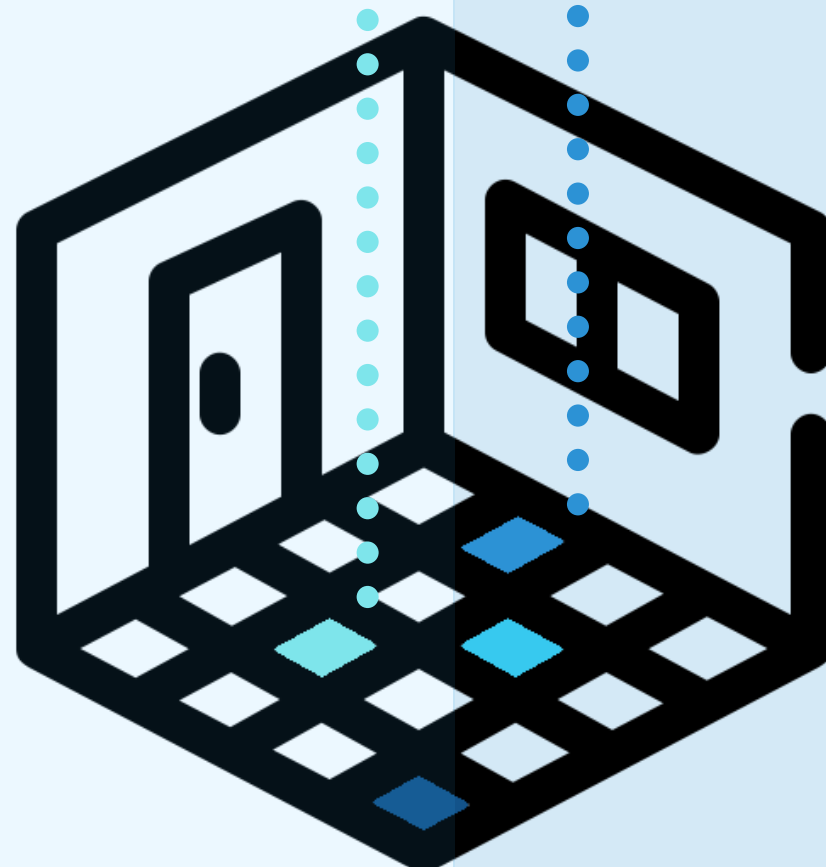
The design of the narrative

Equipment

The location and space design, physical and technical props and inclusion of actors

Evaluation

The tools have important **cognitive benefits** and the activity **improved motivation and commitment to learning tasks!**



USER DEMOGRAPHICS



RESULTS

100%

Agreed that the learning activities were meaningful!

83%

Agreed that they were satisfied with the methods used in this computer-based learning experience

100%

Strongly agreed that they were interested and stimulated to learn more!

100%

Agreed that they felt competent after trying the learning tools provided

Narrative: An enigmatic figure known only as "S" has surfaced with information of critical importance. Upon inspection, the information is inaccessible and attempts to brute-force entry have been unsuccessful. Accompanying the information is a series of clues which are believed to hold the key to constructing two passwords, unlocking the contents within. On opening the first of a series of puzzles, a countdown will commence, and if all are not solved within one hour, the information will be lost forever. Will you solve the puzzle in time?

CLARKE, S., PEEL, D., ARNAB, S., MORINI, L., KEEGAN, H. AND WOOD, O., 2017. ESCAPED: A FRAMEWORK FOR CREATING EDUCATIONAL ESCAPE ROOMS AND INTERACTIVE GAMES TO FOR HIGHER/FURTHER EDUCATION. INTERNATIONAL JOURNAL OF SERIOUS GAMES, 4(3).



CONTACT
D.ELFORD@UEA.AC.UK



DOWNLOAD
[HTTPS://PLAY.GOOGLE.COM/STORE/APPS/DETAILS?ID=COM.DANIELELFORD.CHEMFORD](https://play.google.com/store/apps/details?id=com.danielelford.chemford)

Body of the activity

Three experimental groups (EG) of 1st year undergraduates:

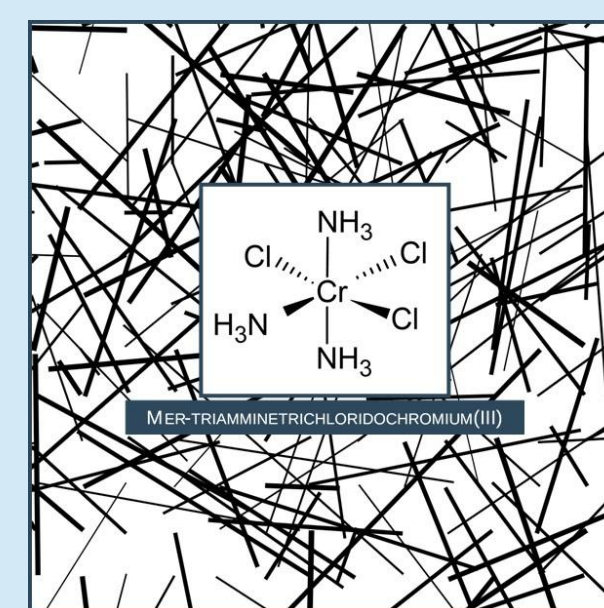
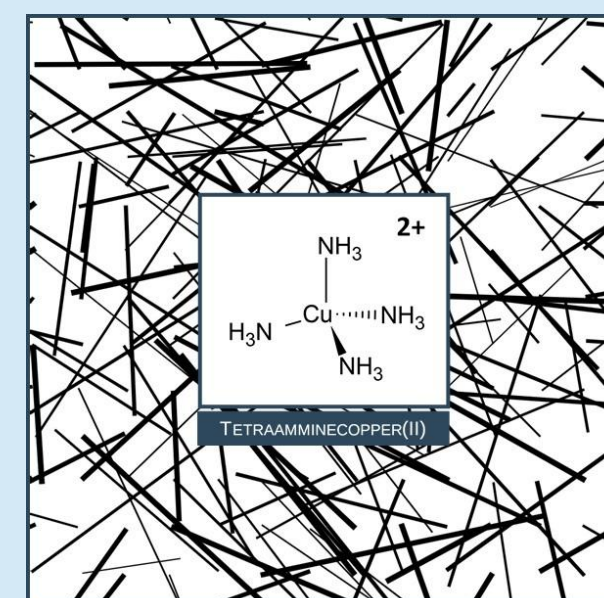
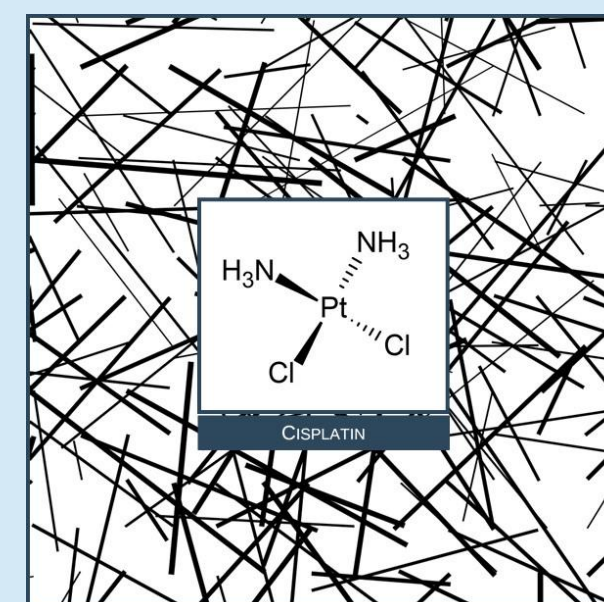
- EG 1 used molecular modelling kits to analyse metal complexes
- EG 2 used Augmented Reality (AR) to analyse metal complexes
- EG 3 used immersive Virtual Reality (iVR) to analyse metal complexes

How to use the AR/iVR tools

Reading of the narrative!

How to ask for assistance

Participants were presented with a variety of cryptic puzzles requiring correct analysis of the metal complexes to solve



Download the **ChemFord** app. Try scanning the markers! *(Don't miss out!)*

Reflection of the learning objectives

Interviews and survey feedback from participants

Future work

1. How does the educational escape activity **fit within the holistic teaching/learning process?** Further develop the pedagogy.
2. How to **evaluate individual participants** to ensure that knowledge and skill competency has been achieved?
3. How an educational escape activity incorporating elements of AR/iVR can be **upscaled to accommodate larger groups of concurrent players?**

Briefing

Puzzle phase of the activity (60 minutes)

Debriefing