RUHR-UNIVERSITÄT BOCHUM

RUB

Experiments for Escape Games in Secondary Chemistry Education

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START

Research question

How should chemical experiments be designed to support their use in Educational Escape Games?

Literature Criteria

School Experiments[1]

- Technical Accuracy
- Significant Effects
- Reproducibility
- Appropriateness to students
- Time, Room and Equipment
- Safety

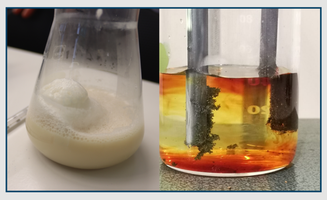
Gamification[2,3]

- Conflict
- Mystery
- Interaction with equipment
- Social Interactions
- Interpersonal Interactions
- Parsimony

CheMystery

School students create and build their own mobile escape games with experiments. Professional game developers and pedagogigal staff help them.

Experiments



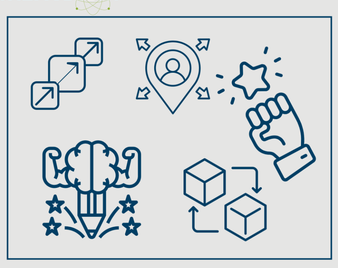
31 Experiments to Green and Sustainable Chemistry are developed by Chemists and evaluated with and for the criteria.

Evaluation Method

- Interviews with Game Developers
- Interviews with School Students
- Video Analysis of Experiments
- Qualitative Content Analysis

→ Raw Data

Results



Design suggestions:

- Scalability
- Motivation
- Creativity
- Situational Positioning
- Modelling

(provisional)

GOAL

References

[1] Bader, Hans Joachim; Lühken, Arnim (2025): Anforderungen an ein Schulexperiment. In: Katrin Antje Sommer, Judith Wambach-Laicher und Peter Pfeifer (Hg.): Konkrete Fachdidaktik Chemie. Grundlagen für das Lernen und Lehren im Chemieunterricht. 3. Auflage. Hannover: Aulis (Unterricht Chemie), S. 464–466.

[2] Bedwell, Wendy L. et al. (2012): Toward a Taxonomy Linking Game Attributes to Learning. In: Simulation & Gaming 43 (6), S. 729–760.

[3] Landers, Richard N. (2014): Developing a Theory of Gamified Learning. In: Simulation & Gaming 45 (6), S. 752–768.

For more information on the project CheMystery:

Website | Instagram | ORCID