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The EcoMystery Project:

Interactive Escape Rooms for Climate Crisis Awareness and Civic Engagement in School

WP3

Escape the Climate Crisis Coursework

Module 8: Physical Escape Rooms

Project partners



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Module 8 - Physical Climate Escape Rooms

The EcoMystery Project: Interactive Escape Rooms for Climate Crisis Awareness and Civic Engagement in School Education

(2024-1-IT02-KA220-SCH-000248873)

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Module 8 - Physical Climate Escape Rooms

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Module 8 - Physical Climate Escape Rooms

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Introduction

Physical climate escape rooms are immersive, time-bound learning experiences in which students solve connected puzzles in order to complete a mission linked to climate change and environmental action. In this module, the escape room is not used only as entertainment. It is a structured educational tool that helps teachers introduce complex topics - such as causes and consequences of climate change, sustainability, environmental pollution, mitigation, adaptation, and community responsibility - in an engaging and memorable way.

Teachers can present the escape room as a collective mission: students work together under time pressure, interpret clues, test ideas, and make decisions. This format can make climate topics more concrete, emotionally meaningful, and action oriented. Pupils who want to go further can be encouraged to investigate local examples, scientific resources, and community initiatives after the activity.

Learning Objectives

In this module we address the objective: Escape room scenarios will be developed, each designed to immerse students in interactive challenges that teach vital aspects of climate change and environmental problem-solving.

By the end of the module, pupils will be able to:

- explain selected causes, impacts, and responses to climate change in age-appropriate terms;
- identify how individual, school, and community actions can contribute to climate crisis mitigation and adaptation;



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- design or adapt simple climate-related escape room tasks for their own local context;
- solve interconnected puzzles by using evidence, observation, reasoning, and teamwork;
- reflect on how collaboration, communication, and decision-making affect success in a shared challenge.

21st century skills developed (Griffin, P., McGaw, B., & Care, E. (2012). Assessment and teaching of 21st Century Skills. Springer: Dordrecht.): critical thinking, creativity, collaboration, communication, problem-solving, self-management, and civic engagement.

Relevant Sustainable Development Goals (SDG, UN (n.d.). The 17 Goals. Sustainable Development. <https://sdgs.un.org/goals>):

- SDG 4 - Quality Education
- SDG 11 - Sustainable Cities and Communities
- SDG 12 - Responsible Consumption and Production
- SDG 13 - Climate Action
- SDG 17 - Partnerships for the Goals

Time required

Core implementation: 2-4 teaching lessons (approximately 90-180 minutes total), depending on whether the teacher uses only the play-and-debrief format or also includes student design work.

Suggested breakdown:

- teacher preparation and room setup: 30-45 minutes;
- briefing: 10 minutes;
- escape room play: 30-45 minutes;



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- debrief and reflection: 20-30 minutes.
- optional design extension: 30-50 minutes or longer.

Additional time may be used for research, community links, or the creation of student-made puzzles.



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Theory

Educational escape rooms are effective because they combine narrative, challenge, and collaboration. A well-designed room encourages students to communicate, distribute roles, test strategies, and learn from failure. Research highlights their strong potential for developing social skills, problem-solving, lateral thinking, resilience, and engagement, while also supporting subject-specific learning through puzzles and tasks. Physical escape rooms can be fully analogue or hybrid, using envelopes, locks, keys, UV clues, maps, or simple digital devices. In school settings, they may take the form of a traditional room, a large-group classroom game, or portable escape boxes. (Botturi & Whitton & Juarez & Seeber & Mulvey & Pelliccioni & Remmele, 2021).

For climate education, this format is especially useful because climate issues are interdisciplinary and value laden. Pupils need not only facts but also opportunities to connect evidence, systems thinking, responsibility, and action. Physical climate escape rooms can therefore include puzzles about energy, waste, biodiversity, water, transport, or local environmental risks. The goal is not merely “to escape” but to understand a problem and act on it. (Ouariachi & Wim, 2020).

Pedagogical Note...

Teachers should pay attention to several design principles:

- align every puzzle with a learning purpose;
- keep the narrative clear and motivating;
- use a sequence of puzzles that is challenging but achievable;
- build in accessibility, clear instructions, and emotional safety;
- allow time for debriefing, because reflection turns play into learning. The importance of debriefing and practical planning is explicitly stressed in the handbook.



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Escape room design also underlines the value of iterative testing, productive failure, design thinking, and the phases of initiation, development, and presentation. These ideas are useful both for teacher-created escape rooms and for student design projects (Sánchez-Navarro & Seeber & Whitton & Botturi & Babazadeh & Remmele & Kiely & Mulvey & Pelliccioni, 2021).

Classroom Activities

The module includes two complementary activities:

1. playing a physical climate escape room with the class and debriefing the learning;
2. guiding students in designing a mini climate escape room or a set of climate puzzles for peers.

Both activities should remain inclusive, locally adaptable, and sensitive to students' emotions about climate change. The aim is to promote agency rather than fear. Teachers should connect challenges to the students' own school, town, or region whenever possible.



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Activity 1 - Mission 2030: Stop the Heat

Subject or subjects	Science, geography, citizenship education, language, and cross-curricular environmental education.
Age/Level	Ages 12-16, adaptable for younger or older learners.
Time required	60-90 minutes total: • 10 minutes briefing • 30-40 minutes of gameplay • 20-30 minutes debrief • optional 10 minutes action planning
Learning goals	Cognitive goals: • identify causes and impacts of climate change; • interpret clues related to energy, waste, transport, and local environment; • connect evidence to practical climate solutions. Affective goals: • strengthen engagement, responsibility, and a sense of agency. Social goals: • collaborate under time pressure; • negotiate decisions; • listen to multiple viewpoints. Psychomotor goals: • manipulate physical materials, maps, locks, envelopes, and clue objects.
Prior knowledge & skills	Basic familiarity with weather versus climate, simple environmental vocabulary, and experience of working in pairs or small groups.



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Materials, resources & settings	Materials, resources: A classroom or library corner arranged as an escape room; envelopes, printed clues, maps, recycled materials, lockable boxes or substitute envelopes with codes, timer, hint cards, pencils, evidence sheet, optional UV pen/light, optional tablet or phone for one digital clue. Setting: classroom or school library; can also be adapted to a community venue.
Community/Stakeholder Involvement (optional)	Optional collaboration with a local NGO, municipal environmental office, Europe Direct Centre, or school eco-committee to provide local data or a follow-up challenge.
Activity description	
Narrative: The year is 2030. The town is facing repeated heatwaves, water stress, and rising waste. Students are part of a rapid response team that must unlock a community climate action plan before the next extreme weather event. Possible puzzle flow: 1. Students decode a message that distinguishes weather from climate. 2. They solve an energy puzzle and obtain code by selecting lower-emission options. 3. They complete a waste-sorting challenge to reveal letters or coordinates. 4. They solve a transport/map puzzle based on the most sustainable travel plan. 5. They match local climate risks such as heat, flood, or drought with practical responses. 6. They solve a final metapuzzle that opens the final box containing the "Community Climate Action Plan". Debrief questions: • Which clues depended on knowledge? • Which required teamwork or strategy? • What actions are realistic in our school or town? • Which choices reduce climate harm, and which improve adaptation? Adaptations:	



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- for younger students: fewer puzzles, more visuals, simpler codes;
- for older students: add data interpretation, trade-offs, and local policy discussion;
- for local adaptation: replace generic examples with local river, transport, energy, or waste issues.

Accessibility & Inclusion

Use mixed-modality clues such as text, visuals, and manipulatives. Avoid relying on one sensory channel only. Offer structured roles such as reader, recorder, code-checker, and materials manager. Provide hint cards. Ensure physical paths are accessible. Avoid fear-based narratives and use inclusive, locally meaningful examples.

References / Bibliography

Botturi, Luca & Whitton, Nicola & Juarez, Dani & Seeber, Günther & Mulvey, Julie & Pelliccioni, Sergio & Remmele, Bernd. (2021). Using escape rooms in teaching - School Break Handbook #1.

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https://www.researchgate.net/publication/353572811_Learning_through_escape_room_design_for_school_students_-_School_Break_Handbook_3

Assessment

Formative Assessment

Observe communication, equitable participation, use of evidence, and persistence.

Summative Assessment (if applicable)

Optional group output: a one-page climate action poster or mini action plan derived from the final mission.

Student Self-Assessment

Students complete a short reflection:

- What clue helped me learn something new?
- How did I contribute to the team?



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	What action could I take in real life?
Peer Feedback	Protocol (e.g., Tell/Ask/Give).
Documentation, Evidence & Follow-Up	
Evidence to Collect	Photos of setup and outputs with permission, reflection cards, team posters, teacher observation notes.
Impact Tracking	Track whether students can name more local climate actions after the activity and whether they report stronger confidence in working on environmental problems together.
Dissemination	Share on the school website, eco-board, parent event, or local community/school sustainability day.
Next Steps	Extend into a class campaign, audit of the school environment, or collaboration with a local stakeholder.
Teacher Reflection	
Teacher Reflection - What puzzle sequence worked best and why? - Which clue was confusing? - Did the debrief help students move from game success to climate understanding? - Were all learners able to contribute?	



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Activity 2 - Design Your Own Local Climate Escape Challenge

Subject or subjects	Science, geography, arts/design, ICT, citizenship education, and language.
Age/Level	Ages 12-16, adaptable for younger or older learners.
Time required	Minimum 2-4 lessons for a short version; ideally 4-6 lessons if students design, test, revise, and present their challenge.
Learning goals	Cognitive goals: • deepen understanding of a selected climate topic through looking for information and puzzle design. Affective goals: • build ownership, resilience, and confidence through iterative improvement. Social goals: • collaborate in design teams; • divide tasks; • test with peers; • use feedback constructively. Creative and technical goals: • create coherent narratives; • prototype puzzles; • organize materials for real users.
Prior knowledge & skills	Basic understanding of climate and sustainability concepts; prior experience of playing at least one escape-style activity is strongly recommended.



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Materials, resources & settings	Materials, resources: Paper, cardboard, envelopes, markers, recycled materials, optional boxes/locks, local data sources, planning template, testing checklist, reflection log. Setting: classroom, makerspace, library, or hybrid setting if one clue is digital.
Community/Stakeholder Involvement (optional)	Optional audience includes another class, parents, school leadership, or community members who can play the students' final challenge.
Activity description	
Students work in teams of 3-5 to design a short physical climate escape challenge connected to a local issue such as waste, urban heat, water use, biodiversity, transport, or energy. This reflects the emphasis on collaborative design, iterative testing, group work, and presentation to a real audience. The activity follows an adapted design-thinking process: Initiation phase • play an example escape room or puzzle sequence (e.g. Activity Mission 2030: Stop the Heat); • discuss what makes a puzzle fair, engaging, and educational; • define audience, age level, topic, and intended learning. Development phase • discuss with players and identify what they need to know; • define the learning problem; • propose possible narratives and puzzles; • build a simple prototype; • test repeatedly, revise, and improve. Presentation phase • run the challenge for peers or invited players; • collect feedback; • discuss what changed through testing and why.	



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The teacher should explicitly frame failure as part of the process: the first version will not be perfect, and revision is expected. Students should test puzzles several times and document improvements. This emphasizes iterative testing, productive failure, and the initiation-development-presentation sequence.

Adaptations:

- younger students can design one box or one short puzzle chain instead of a full room;
- older students can include data, ethical dilemmas, or community interviews;
- local dimension can be strengthened through real photographs, local maps, or school-based sustainability data.

Accessibility & Inclusion

Use mixed-modality clues such as text, visuals, and manipulatives. Avoid relying on one sensory channel only. Offer structured roles such as reader, recorder, code-checker, and materials manager. Provide hint cards. Ensure physical paths are accessible. Avoid fear-based narratives and use inclusive, locally meaningful examples.

References / Bibliography

Botturi, Luca & Whitton, Nicola & Juarez, Dani & Seeber, Günther & Mulvey, Julie & Pelliccioni, Sergio & Remmele, Bernd. (2021). Using escape rooms in teaching - School Break Handbook #1.

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Assessment



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Formative Assessment	Planning notes, prototype ideas, responsiveness to feedback, and team collaboration.
Summative Assessment (if applicable)	The final product may be the designed challenge, a design portfolio, or a short presentation explaining climate content, puzzle logic, and revisions.
Student Self-Assessment	Students rate their contribution, resilience, and use of feedback. They identify one design success and one thing to improve.
Peer Feedback	Playtesters provide structured feedback: • What was clear? • What was confusing? • What did I learn? • What should be changed?
Documentation, Evidence & Follow-Up	
Evidence to Collect	Design briefs, sketches, test logs, revised puzzle versions, player feedback sheets, photos, and presentation slides.
Impact Tracking	Measure changes in students' confidence to communicate climate issues creatively and to design for a real audience.
Dissemination	Showcase during a school open day, sustainability week, or partner-school exchange.
Next Steps	Refine the best challenge for wider school use or combine selected puzzles into a larger cross-curricular climate escape room.
Teacher Reflection	



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- Did teams really test and revise, or move too quickly to final production?
- Which kinds of support were most needed?
- How did the design process shape climate understanding and civic engagement?



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Assessment and evaluation

Assessment should be continuous and formative. During the activities, teachers can observe participation, evidence-based reasoning, collaboration, persistence, and the quality of reflection. Evaluation should address both knowledge outcomes and broader competencies.

Suitable methods include:

- teacher observation;
- group debrief notes;
- student self-assessment;
- peer feedback;
- short reflective presentations.

For the activity Design Your Own Local Climate Escape Challenge a simple rubric can assess:

- clarity of narrative;
- relevance of climate content;
- coherence of puzzle flow;
- quality of testing and revision.



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Extra resources / further learning materials

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