

**EDUCATIONAL ESCAPE ROOMS IN HIGHER
EDUCATION**

PART 4

SYNTHESIS REPORT

UNLOCK

Creativity through game-based learning at
higher education

December, 2020

WWW.UN-LOCK.EU

PROJECT PARTNERS



FH MÜNSTER
University of Applied Sciences



Disclaimer

This document was prepared by the authors using data that had been collected in the framework of an Erasmus+ project funded by the European Commission. The report reflects the views only of the project consortium and the Commission cannot be held responsible for any use, which may be made of the information contained therein.

Acknowledgement

The UNLOCK project Synthesis Report was prepared by the Science to Business Marketing Research Centre of Münster University of Applied Sciences as part of the KA2 Knowledge Alliance UNLOCK project, funded by the European Commission during the period of 2019-2022. For more information about the report, please contact Hacer Tercanli (tercanli@fh-muenster.de). Comments and input were received from the project representatives at Amsterdam University of Applied Sciences (AUAS) in the development and finalisation of the document (Dr. Richard Martina, Prof. Ingrid Wakkee).

License

This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/> or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94042, USA.

Introduction to the document

UNLOCK project Synthesis Report is prepared with reference to the findings of UNLOCK project country reports from Portugal, Netherlands, Germany, Spain, Denmark, and Lithuania, developed via interviews with 25+ EER researchers and practitioners, analysis of desk and academic research, and further insights from 30+ Educational Escape Room (EER) case studies. The findings have been generated as part of the Research Work Package (WP) phase of the UNLOCK project.

The report contributes to the discussions on European EERs via presentation of the research findings on EER pedagogies and design elements as well as supporting and inhibiting factors in the adoption of the EERs in the (higher) education institutions; introducing emerging themes, and providing recommendations for future EER practice and research.

How to read the UNLOCK project WP4 research phase reports?

UNLOCK project research phase has been concluded with set of 4 reports, that are complementary in content:

PART 1: LITERATURE REVIEW

PART 2: COUNTRY REPORT (Compilation)

PART 3: CASE STUDY REPORT

PART 4: SYNTHESIS REPORT

The literature review provides an overview of the status-quo of the EERs in higher education sector (PART 1), followed by UNLOCK project partner country reports (Denmark, Germany, Netherlands, Lithuania, Portugal, Spain) for targeted insights on the adoption of EERs in the local (higher) education contexts (PART 2). Case study report offers a detailed presentation and analysis of 37 case studies identified from project country regions and beyond (PART 3). Finally, the synthesis report provides a discussion of the major findings, along with emerging themes and recommendations for further EER research and practice (PART 4).

The reports are in the form of living documents, that will be updated during the lifetime of the project.

Definitions

Term	Description
Game based learning	Type of game play with defined learning outcomes (Shaffer, Halverson, Squire, & Gee, 2005). Usually it is assumed that the game is a digital game, but this is not always the case.
Gamification	Use of game elements, such as incentive systems, to motivate players to engage in a task they otherwise would not find attractive (Plass, Homer, & Kinzer, 2015).
Educational escape room (EER)	Live-action team-based game where players discover clues, solve puzzles, and solve tasks in one or more rooms in order to accomplish a specific goal (usually escaping from the room) in a limited amount of time (Nicholson, 2015)
Student	In the context of this research, the term student includes those registered to all levels and types of formal studies, including secondary, vocational, undergraduate and postgraduate levels.
Game Designer	Game designers (e.g., Schell 2008, Koster 2004) are professionals who do considerable thinking and writing about what makes play fun, including social play. In some of the case studies in the report, the educators/ support staff/ professionals with game design specializations are referred as Game designers.
Game Master	A game master (GM; also known as game manager, game moderator or referee) is a person who acts as an organizer, officiant for regarding rules, arbitrator, and moderator for a multiplayer role-playing game. In the report, in some of the case studies the educators and/or the support staff are referred as Game Masters.
Higher Education Institutions (HEIs)	Higher education, any of various types of education given in postsecondary institutions of learning and usually affording, at the end of a course of study, a named degree, diploma, or certificate of higher studies. Higher-educational institutions include not only universities and colleges but also various professional schools that provide preparation in such fields as law, theology, medicine, business, music, and art. Higher education also includes teacher-training schools, junior colleges, and institutes of technology.
Folk High School (Denmark School System)	A folk high school is a non-formal residential school offering learning opportunities in almost any subject. Most students are between 18 and 24 years old and the length of a typical stay is 4 months. There are no academic requirements for admittance, and there are no exams - but students get a diploma as a proof of their attendance

Contents

Introduction to the document	3
Definitions	4
1. EERs in Higher Education Institutions (HEIs) in the European context	6
1.1. Regional adaptation of the EERs in the project partner regions.....	6
1.2. Disciplinary focus.....	6
2. Emerging themes.....	6
2.1. Hybridity.....	6
2.2. Institutional boundary spanning	7
2.3. Educator aspirations towards sustainability of EERs	8
3. EER development and design	8
3.1. Development.....	8
3.2. Design.....	9
3.3. EER design challenges	10
3.4. EER assessment & evaluation	11
4. Supporting and inhibiting factors in the HEI adoption of EERs.....	11
4.1. Supporting factors.....	11
4.2. Inhibiting factors.....	12
5. Reported outcomes and impact of EERs.....	12
6. Preparing educators for successful adoption of EER methodologies	13
7. Recommendations for EER research and practice	15

1. EERs in Higher Education Institutions (HEIs) in the European context

1.1. Regional adaptation of the EERs in the project partner regions

Physical EERs in the HEIs are still in their infancy. In all targeted countries (Portugal, Netherlands, Germany, Spain, Denmark, and Lithuania) EERs are more common in the primary and secondary education, as well as in the vocational and adult education institutions than in the HEIs. There were different points posed for this discrepancy in the adoption of the EERs at different educational levels. In the German and Dutch HEI contexts, EER methodologies are mentioned to be perceived in negative light, due to the belief that learning and gaming are not compatible, or EERs are not “serious enough”. The rigidity of curriculum and education methodologies in the HEI sector is also stated as a barrier. According to interviewees there are more opportunities for experimenting with new pedagogies at the primary levels of education. Similar concerns were voiced for the context of Finland, where HEI educators are indicated to be restricted with the curriculum to be followed.

The interviews from Denmark, Netherlands, and Spain revealed there is significant increase in the adoption of the EERs. In the Danish case, however, this holds true only for non-HEI institutions. Except for one case, no other EER has been identified in the HEIs in spite of a mentioned interest in GBL in Denmark. Similarly, in the case of Spain, the increase in the EER adoption is linked to non-HEI contexts, with large part of the current initiatives carried out in the past five years. In Portugal, the EERs are in emerging state. However, there exists, despite limited, EER research and practice communities based in the universities. In the Lithuanian education context, place-based EERs are still are at the very early stage of development, and current interest in GBL is more focused on the ICT and digital games.

1. 2. Disciplinary focus

According to literature, the medical disciplines and the disciplines science, technology, engineering and mathematics (STEM) are pioneers in the implementation of educational escape rooms (Fotaris & Mastoras, 2019). However, due to the project focus on the potential of EERs in fostering creativity and entrepreneurship, majority of EERs identified in the target countries are designed within the field of Social Sciences (including Business, Law, and Economics, Languages and Literature), followed by Formal, Natural, Medical and Health sciences. This can also be explained by the UNLOCK project focus on physical EERs, as opposed to digital, that might be considered as a more suitable model in understanding human behavior and development of soft skills within Social Sciences.

2. Emerging themes

2.1. Hybridity

EERs are observed as hybrid learning environments in the HEIs, in the forms of:

- merging of physical and digital learning spaces, e.g. in the EER *Mastermind* at University of Utrecht;

- collaborative learning environments involving mixed groups of players, e.g. students and public, as in *RSM Escape Room* at Rotterdam School of Management and mixed group of academics and students at “*Open Access*” *Escape Room* at Kaunas University of Technology, and;
- students and educators as co-creators, e.g. in the collaborative EER experience at Vallekilde Adult School and Aalborg University *IT, Learning & design Lab*, and in the English language course of the first-year students enrolled in the subject of Foreign Language (English) for Teachers of the University of Valencia, Spain.

UNLOCK cases have also shown how **students are becoming part of advancement of academic knowledge**, both participating in and being observed within EER settings for behavioral analysis, and thus contributing to the integration of new knowledge back into teaching,

2.2. Institutional boundary spanning

EERs are also observed as **tools for institutional boundary spanning**. European EERs are designed and implemented in collaboration with HEI internal and external stakeholders, including:

- HEI ICT units, e.g. intermediary organizations such as *Educate-IT*, a program within the University of Utrecht to support teachers and students in the transition towards blended learning, in the EER case of *Mastermind*;
- start-ups, e.g. Think Square, in the EER case of *Think Space*;
- municipalities, e.g. Sønderborg Municipality and private entity Rubi Lee’s Escape House. As recognized from the examples, these collaborations are found to be more common in the German, Dutch, and Danish educational contexts.

The creation and implementation of EERs are initiated and coordinated by educators. However, as understood, this process does not take place in a vacuum. In the higher education context, **academics are observed to work in and interact with an ecosystem** that enables or hinders efforts placed in developing EERs. Roles of the stakeholders in this ecosystem can be summarized as below:

- **Educators and staff as game designers and game masters:** Educators as EER initiators, along with support staff, are responsible for moderating the game experience as well as observing the behavior and facilitating reflection upon the performance of the participants;
- **Students both co-creators and participants:** The participating students vary with respect to their initial knowledge and their educational experience. As main beneficiaries of the experience, students are responsible for the development and daily operations, gathering data, designing physical components, functioning as testers, and running daily operations;
- **Regional and institutional administration as supporters:** These stakeholders provide funding for the EER projects, serve as a source for required materialistic and technical resources, as well as physical infrastructure;

- **Public and private institutions as collaborators:** Educators cooperate with other educational institutions, and commercial escape room facilities to create more immersive experiences.

The EER at the RSM Rotterdam School of Management (RSM) of Erasmus University has been identified to have one of the most complex settings, with **stakeholder engagement is extended both inside and outside the institution**. Students help find information to create the themes of the escape room, and academics creating the narrative, and providing support with materials to construct the escape room. Facility services assign a location and construct the room itself. The legal services help with online payment services, while marketing & communication create the content on the website to promote the escape room. The dean facilitates the budget arrangements and the IT department aids in installing the online booking systems. Alumni helps providing information about SDGs they find interesting. Finally, a vendor of the online booking and payment system gets involved as third party.

The boundary spanning is observed to be facilitated by network institutions as well, that are dedicated to the adoption of innovative pedagogies, as in the case of Danish private organization House of Science. The EER-material from House of Science is sent to potential interest groups from those network institutions, that fosters recognition and adoption of the methodology by the educators. Here, it is suggested that **stakeholder dependency could make the EER collaborations vulnerable**. Transparency in terms of ownership (materials), facilitation (teaching EER) and responsibility (learning objectives) before initiating EERs is acknowledged to be the key to a fruitful collaboration.

2.3. Educator aspirations towards sustainability of EERs

Sustainability of EERs is mentioned to be one of the major aspirations of the educators, meaning, **making EERs re-playable and an embedded element of the curriculum**. Sustainability can be achieved via integrating EERs in the educational curriculum, and treating them as an established activity, as embedded within the existing learning and teaching structures. This is addressed by efforts of educators' EER promotion among colleagues, and support in the integration of the methodology across different departments in their institutions. Opening up the EERs to **external participants and partners** outside of the university is also seen a pathway for both quality and sustainability of EERs, via co-design and implementation of the games. This dimension also includes expanding partners by diversifying the purpose of EERs, as in scientific EERs to be used as a lab for other research purposes.

Educators are observed to move towards a more **informed and strategic approach to EER adoption**, e.g. starting with the single goal of motivating students, followed by interest in obtaining information about competencies such as leadership and communication and finally aiming to inform students what gamification is and work on development of specific competencies via EERs.

3. EER development and design

3.1. Development

Targeting 21st century skills, clearly defining ILOs, acquiring resources, and reaching out to collaborators have been recognized as crucial steps in EER development. Conducting test runs

and preparing blueprints and guidelines are observed to be common as well. Accordingly, in the regional cases, the EERs are identified to have certain knowledge, skill and attitude-oriented **goals** for the involved students and educators.

- Students: Acquisition of knowledge in the subject matter, e.g. biology, mathematics, literature (Knowledge); Soft skills, e.g. cooperation, creativity, teamwork, problem-solving skills & hard: e.g. digital skills, coding, encryption (Skills); Increase interest in STEM, SDGs, and enthusiasm for learning of the subject matter, increasing motivation for action (Attitude);
- Educators: New approaches to teaching, student centred teaching (Knowledge); Skills and competences for the use of innovative pedagogies (Skills); Increase enthusiasm, and awareness on topics e.g. academic and cultural student diversity (Attitude).

The interviewees pointed out to the considerations related to working with diverse groups, and make sure proper ‘**framing**’ is achieved. This is because there are many different micro- and macro-frameworks that play into the interpretation of individual things and events, their contexts and meaning. In few cases, educators are observed to prepare pre-game surveys including IQ, and personality tests, e.g. Myers - Briggs indicator (MBTI), and cultural frameworks, e.g. Lewis Model to group students in teams accordingly, and introduce certain cultural patterns of behaviour that would show up in the game, e.g. in the EERs *Intercultural Management Escape Room Games*, and *The Lost Scientist*.

Educators also reported preparation of a number of **tools and materials** as part of their EERs, to increase the complexity and depth of student experience. Some of the mentioned materials are grouped as below:

- Digital: Hardware: Flat screen, led steering lights, microphone, baby camera, signal lights, computer screens, walkie-talkies, dictaphones (voice recorders), special wearable sensors, virtual reality devices, Software: sound system, Skype connection, Python script, QR codes
- Physical: Puzzles: wordplays, Sudoku, dice games, crossword; Materials: White board, wooden glass, padlocks, screws and nuts, books, math-problems, candles, tape, pens, toy gun, fake money, treasure chest, UV pencils, UV flashlights; Furniture: desk, bookcase, sofa, wardrobe, display cabinet

3.2. Design

There are three major **EER design elements emphasized**, being, (i) gamification, (ii) ILOs, and (iii) pedagogical elements. Accordingly, the country reports discuss gamification elements as rules hints, feedback, prizes, rewards, progression levels, time limit, ILOs as those targeting development of skills and repetition of already offered knowledge, and pedagogical elements embedding principles of problem-based learning (PBL), active teaching method, self-regulation, collaborative learning, inductive learning, and scaffolding theory of self-directed learning. Accordingly, students’ active involvement in creation and participation in escape rooms is encouraged.

Interviewees have pointed out that before enacting students as designers, they have to be prepared better in the disciplinary content, to prevent them feeling unsure about achieving their

learning outcomes. **Student as game designers and game participants have different learning outcomes.** Thus, this complex learning environment calls for ‘differentiated instruction’ (DI) as a teaching framework to understand and approach the learning situation.

3.3. EER design challenges

Most major EER design challenges reported by the interviewees as (i) lack of clear ILOs, (ii) identification of the right EER methodology to reach the IOs, and (iii) selection and integration of game design elements.

Educators are warned that if clear learning goals are missing, there is a risk of ambiguity, which confuses the students more than necessary. It is further pointed out that (i) the **context** can be a source of ambiguity when the game designer plays on the sociocultural discourse into which an object or event is interpreted, (ii) **The personal relationship to things** and events can be a source of ambiguity when the individual becomes in doubt about his interpretation and assessment of these, and finally (iii) **information about an artifact** can give rise to ambiguity.

This consideration about the concept of ambiguity was brought in attention in the EER case of Montpellier Business School, with reference to challenges of designing games for international groups, due to cultural differences in perceptions towards games, teamwork, and paths to task completion. In this particular case, the course instructor has had to change or even expand her cultural approach at times when selecting elements as part of hints and puzzles. For example, her decision on the selection of certain images slowed down some groups, since the content of the images was not perceived as they were intended. The vocabulary used in the scenario has to be carefully considered as it is culture specific. To ensure cultural sensitivity of the game, it is important to get feedback or pilot test the game with multicultural teams prior to implementation with students.

Connecting the tasks of the game with each other to create a coherent pattern between the individual puzzles, in order to reach the ILOs have proven to be a challenge. It is reported that often the connections between the tasks feel constructed and not intuitive. This difficulty further challenges the efforts for creating new environments with different combination of puzzles, especially if educators are wishing to integrate EER activities on a continuous basis in their course programs.

Time pressure, group dynamic and the game framework influenced the level of contemplation and reflection, and instead made the participants focus on the form of the game rather than academic content. Thus, facilitators find themselves challenged to make a trade-off decision between steering the attention of the students more on discipline related tasks and maintaining the immersiveness of a game. This dichotomy between content/form also exists between appealing/demanding in terms of puzzle selection. The problems that students face are expected to be clear enough, and at the same time sufficiently demanding.

Another challenge was stated as **adjusting the level of complexity** where students had to develop the escape game themselves using their pre-existing knowledge together with materials and guidance from teachers. Here, the ambiguity of the learning adds an extra layer since the students need to be the designers of their own learning. It is suggested that this form of EER-

format should be used, for example in an evaluation process and not necessarily in an explorative learning process.

3.4. EER assessment & evaluation

It is reported that evaluating the performance of students within the game is difficult, since the performance in the game is a group effort, which makes assigning individual grades a challenge. Furthermore, there are different player and learning types within groups, that hinders making a fair assessment. Among the EER cases investigated, formative assessment is found to be common. It takes place through reflections during debriefing, reflect on oneself and others. Assessment also relies on self-reporting questionnaires, pre and posttests conducted by the educators, and notes, pictures and videos recorded.

4. Supporting and inhibiting factors in the HEI adoption of EERs

4.1. Supporting factors

UNLOCK research revealed a number of supporting factors that contribute to the successful development and implementation of EERs in educational contexts. Educators are on different levels of experience concerning EERs. Some consult to introductory videos, guidebooks, and attend trainings organized by their institutions, while others already have experience with EERs due to the diverse experience at universities and companies before. In addition, interviewed educators are observed not only being interested in the subject matter they teach, but also have the attitude to effectively deliver their courses via engaging and innovative pedagogies.

- **Educators knowledge, skills and attitudes:** Educators previous experience with ERs, knowledge of EERs and their design methodologies, creativity and entrepreneurial mindset, timing skills, flexibility, writing skills, technical competencies and design abilities
- **Institutional factors:** Institutions introducing CPD courses & learning labs, availability of relevant workshops, institutional recognition, available institutional and regional funding, courses in which the EERs can be embedded
- **Methodological factors:** Involving students in the game design, integrating different stakeholders, both inside and outside educational institutions, in order to succeed implementing EERs
- **Resource and community factors:** Ready-made EER packages, guidebooks, societies and networks, blueprint and/ or elaborated systematic plan, online resource platforms, toolboxes

Among the stakeholders, the Dutch and German **national and regional funding programmes** and institutional initiatives are found to provide financial resources for the educators to invest explore/ innovate/create/implement an escape room. Accordingly, the support provided by the regional governments and HEIs, as captured in the case studies include:

- Teacher Development Fund provided by the Ministry of Education (NL)
- HE Internal funds, i.e., Stimulation Fund for Educational Innovation, with accessed grants amounting to 20,000 Euros, Grassroots funding scheme that provides funding for up to 1000 euros for small, accessible, and ICT-related projects that can be readily

implemented in an educational setting, and departmental funding for the design and daily implementation of the games (NL), Funding from the Learning Infrastructure program, advised by the Quality Improvement Commission (QVK), in the amount of 49,400 euros (DE).

In the case of EERs funded by European Commission, in one of the cases the teams resumed their activities by embedding the EER approach in their existing initiatives. Sustainability of EERs as an integral part of teaching is also ensured by exploring options for further funding, through collaborations with public and private organisations who would be interested in knowledge exchange generated by the experiences.

Grants, training, coaching, online resources, all matter, but it is the attitude and approach of educators, to pull these resources together, and creatively design own game towards own purpose. Educators can draw back on facilities and equipment of their faculties, which reduces the overall costs of the escape room implementation.

4.2. Inhibiting factors

Inhibiting factors reported by the interviewees included factors related to educators' own competencies, institutional barriers, students' preparedness, and lacking resources. One of the highlighted inhibiting factors experienced included resistance from management, due to concerns regarding content over form.

- **Educators knowledge skills, and attitudes:** Adopting a new methodology, creating a successful string of puzzles, setting up a digital EER, adjusting the difficulty level, managing cultural & personality combination in teams, lack of technical competencies and storytelling skills
- **Institutional factors:** Bureaucracy in the arrangement of the space the game is planned to be played; conflicting approaches to education, meeting safety regulations
- **Students:** Unfamiliarity with the concept of EER games; lack of inspiration/ interest/ creativity
- **Resources:** Lacking time and finances developing and maintaining an EER; unsustainable use of props; time invested in supervision of the games; technical problems with electronic devices

5. Reported outcomes and impact of EERs

Regarding the outcomes and impact of EERs, the findings are mainly consistent with those mentioned in the extant literature, in particular, e.g. acquired skills of students, such as creativity, teamwork, communication and problem-solving skills. Current literature on EER primarily focuses on the impact ERs on students and their learnings. UNLOCK research findings additionally shed light on the impact EERs on the educators and the broader stakeholder landscape. Regarding more concrete outputs, the results of some of the EERs from partner regions include:

- Professional recognition, e.g. the EER Letras Galegas being awarded with a European Quality Label;

- Scientific outputs, e.g. research papers, and the outputs of the EERs MatPorBib and Portuguese Literature having been published in a book chapter
- Novel data to be analyzed, e.g. video recording data collected in the EERs Lost Scientist and Think Space

Reported impact of the EERs on **students** include mastery learning (i.e., self-directed and incremental learning) and behavioral changes, 21st century skills, creativity, and communication, as well as research skills, reflection, higher cognitive skills (e.g., association, analytical, critical thinking, and problem-solving skills), ICT and reading skills. The EERs are reported to have a positive impact on the attitudes towards acquiring content knowledge, as well as increasing awareness and intention that stimulate student motivation, and overall enthusiasm for learning.

Impact of the adoption of EER practices on **educators** are reported to include increased awareness and effective practice of innovative pedagogies, development of own professional portfolio, growing familiarity with varied resources in order to support effective delivery of the subject matter, and being acquainted and able to implement active and collaborative educational methodologies.

As per our observations, the **HEIs** where the EERs are being adopted gain visibility and recognition among other HEIs for their exploitation of innovative teaching methodologies, benefit from increased HEI-admin staff engagement via support in development and active participation in games, and tap the opportunity with third party income generation via integration of external groups of EER participants. EERs with open public involvement leads to strengthened community-HEI engagement. And **businesses** that cooperate with the HEIs in the development and delivery of the EERs benefit from the synergies, in developing knowledge base for new business models (for ER companies), as well as gaining new customer base and diversifying sources of income.

6. Preparing educators for successful adoption of EER methodologies

Interviews have revealed the urgency of supporting educators in preparing themselves in game design theory and EERs as innovative pedagogies. This can be realized via provision of relevant knowledge and opportunities for educators in experiencing EERs themselves, and experimenting with developing EERs towards development of a theoretical understanding of the approach, gaining practical experience, and embracing an entrepreneurial attitude. In the HEI context this support can be organized as part of **continuous professional development (CPD)** programmes offered to educators.

Setting up of a European EER online platform for sharing and dissemination of EER tools and methodologies is emphasized as crucial. Such platform is suggested to contain examples of EERs, along with blueprints, design schemes, and replicable EER modules classified in accordance with disciplines and curricular considerations across European regions, as well as manuals and guidelines for the educators on how to modify and integrate them in their courses. Working as a network hub, such platform would bring together educators as EER game

enthusiasts, and lead creation of new synergies and collaborations among involved network participants.

7. Recommendations for EER research and practice

Practitioners:

- **Access resources, e.g. knowledge, partners, budget to design and implement impactful EERs:** Educators are expected to pull together available resources and explore new forms of value co-creation with external stakeholders. The results show deeper partnerships between academia and non-academia is required to reap all the benefits that EER have to offer. This can be achieved via e.g. opening up commercial premises for the HEIs, and commercialization of HEI EERs for external participants.
- **Create legitimacy within own institution:** Educators are recommended to drive a bottom up interest among colleagues, and create a momentum in the demand for a more common use of EERs in own institutions.
- **Advance EERs as a pedagogy via research and knowledge exchange at events:** Educators are encouraged to share their experiences both in internal events, and externally organized workshops and conferences, to build network and share experiences, towards advancement of knowledge and development of a strong EER support community in Europe.

Researchers:

Future research is suggested to focus on:

- how learning outcomes are influenced by specific escape room designs;
- potential of EERs as behavioral assessment tools to identify e.g. group dynamics and leadership
- transdisciplinarity in EERs, e.g. social sciences and engineering
- reusability and organizational sustainability of the EERs
- digitalization of place-based educational escape room designs

Strategy and policy makers:

- Drawing on the research findings, there is a recognizable discrepancy observed among the project partner regions in the availability of governmental and institutional funding allocated to the HEIs for the adoption of innovative GBL pedagogies. In the Northern and Western European regions, primarily in the Netherlands and Germany there are financial incentives available for the HEIs, in compared to the Southern and Eastern regions, e.g. in Portugal and Lithuania where they rely more on European projects funding and own resources. This calls for **recognition of the importance of innovative pedagogies** in all European regions, and **stronger incentive schemes** by the HEIs that will help educators better mobilize EER resources.