ESCAPE GAME PEDAGOGY: A FRAMEWORK FOR INCLUSIVE LIFELONG LEARNING

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ABSTRACT

Accelerated transformation in working life and society has heightened the demand for flexible, inclusive, and purposeful pedagogical approaches in higher education and lifelong learning. The diversity of adult learners calls for learning environments that support participation, agency, and inclusion. This paper examines escape game pedagogy as an innovative practice for promoting inclusive learning in lifelong learning based on the pedagogical implementations developed at the University of Eastern Finland.

Therefore, escape game pedagogy is approached through three complementary perspectives, each supported by prior research: experiential and multisensory learning, collaborative learning and social inclusion, as well as active learner agency, psychological safety, and the acceptance of uncertainty. Escape game pedagogy is not just a motivating, gamified method, but a learner-centred and collaborative pedagogical approach. From an inclusive learning perspective, educational escape games foster diverse modes of participation and knowledge construction and offer a flexible framework for designing collaborative and inclusive learning environments in lifelong learning contexts.

INTRODUCTION

Continuous changes in working life and society have increased the need for adults to upscale their competencies, placing new demands on the pedagogy of lifelong learning. This highlights the need for learning solutions that recognise the diverse backgrounds, capabilities, and ways in which adult learners participate in learning (Arslan et al., 2024). Higher education institutions, as providers of continuing education, have faced a growing need to experiment with new pedagogical approaches to support adult learners' agency, inclusion, and meaningfulness of learning in more diverse ways. Within this transformation, universities function not only as providers of education but also as pedagogical development environments in which new forms of learning can be tested, evaluated, and embedded as part of lifelong learning.

At the University of Eastern Finland, escape game pedagogy has been developed and applied as a pedagogical approach to support learning since the early 2020s. This development has been supported by UEF's unique Sm4rt LOC escape game laboratory, which was designed specifically for the development of educational escape games. Originally, escape games were created as entertainment-oriented activities in which participants solve tasks within a limited time to achieve a shared goal (Nicholson, 2015). When applied in educational contexts, educational escape games are deliberately designed

to support predefined learning outcomes and competence development (Fotaris & Mastoras, 2019; Veldkamp et al., 2020).

Educational escape games offer a pedagogical approach that addresses key challenges in lifelong learning and adult education by integrating experiential, collaborative, and inclusive learning. The key characteristics of escape game pedagogy include narrative structure, immersion, problem-solving, and collaboration, which together create active and learner-centred learning situations. The gamified structure encourages practical application, collaborative learning, and reflection, supporting different ways of participation. Owing to these features, escape game pedagogy is adaptable to a wide range of educational contexts and can be implemented in various formats, including physical, digital, hybrid, and portable solutions. In this article, the term ‘escape games’ is used to refer to all these modalities.

At the University of Eastern Finland, escape game pedagogy has been applied across educational levels, illustrating its scalability from early education to adult and continuing education. Examples include a physical escape game supporting early literacy skills in primary education; work-life-oriented physical and virtual escape games in pharmacy degree programmes; and, within lifelong learning, a hybrid escape game supporting hybrid teaching practices, as well as digital escape games addressing Finnish language learning and sustainable circular economy. In addition, escape game pedagogy has been utilised in teacher professional development, where escape games function both as a pedagogical method and as a means for learning escape game pedagogy itself. The flexibility of the approach aligns well with the pedagogical needs of lifelong learning. Through deliberate choices in implementation format and game design, escape games can respond to diverse learning needs and offer opportunities to enhance accessibility and support inclusive learning environments.

Our practical observations indicate that escape game pedagogy is not merely a motivating or entertaining method; rather, it structures learning as an experimental, collaborative, and learner-centred process. This perspective aligns with research on adult education and lifelong learning, which emphasises the active role of learners, interaction, and meaningful, accessible learning environments (Gouthro & Holloway, 2023; Arslan et al., 2024). Driven by digitalisation, higher education institutions are increasingly developing flexible, learner-centred solutions that promote inclusion and collaborative learning (Håkansson Lindqvist et al., 2024). In this context, adult education requires pedagogical approaches that strengthen learner agency and enable experiential, collaborative, and flexible learning.

In higher education, educational escape games have become increasingly common as tools for developing communication, teamwork, and problem-solving skills, as well as for enhancing students’ motivation and engagement (Clarke, 2017; Charlesworth, 2018). Escape game pedagogy has also been shown to promote experiential learning, learner agency, and lifelong learning competences in adult education (Mijal et al., 2020). Based on practical experience, escape game pedagogy has proven to be an approach that enriches both teaching and learning. Within the context of lifelong learning, escape games provide learners with opportunities to engage actively, leverage their existing knowledge, and collaborate in constructing new understanding. They lower the threshold for participation, support diverse ways of learning, and create space for shared problem-solving.

This paper examines how escape game pedagogy can support inclusive learning in the context of lifelong learning. The topic is approached from three key perspectives that characterise both pedagogical escape games and the particular needs of adult learning. The first perspective focuses on experiential and multisensory learning, the second on collaborative learning and social inclusion, and the third on active learner agency, psychological safety, and the acceptance of uncertainty in learning.

Example of Escape Game Pedagogy in Practice: The “Emergency Lighthouse”

The Emergency Lighthouse is a short, physical educational escape game designed to demonstrate to teachers how subject-specific learning content can be embedded in an immersive game narrative. The game is played in a physical room in small groups and lasts approximately ten minutes. The space is staged with lighting and sound effects to create an immersive atmosphere.

The session begins with a brief introduction to the game narrative and the collaborative nature of the task. At the start of the game, participants access an audio message via a QR code introducing the scenario: due to climate change, an ice floe has collapsed, creating a hazard for ships at sea. The players’ task is to activate an emergency lighthouse by following an activation manual and solving three interconnected tasks. In this example, the tasks focus on mathematical literacy, including logical reasoning, equation solving, identifying geometric figures, and reading coordinates. Each task solved reveals information needed to progress, ultimately leading to a numerical code.

After completing the game, a guided reflection is conducted in which participants discuss their experiences and the thoughts the game evoked. In a teacher professional development context, the discussion also examines how narrative, atmosphere, and subject content were integrated into the game and how similar design principles could be applied in participants’ own teaching.

EXPERIENTIAL AND MULTISENSORY LEARNING

In educational escape games, the principles of experiential and multisensory learning are realised. Escape games are grounded in experiential learning, as they integrate hands-on activity, problem-solving, and a narrative context in ways that engage learners through multiple sensory channels and support learning through experience (Fotaris & Mastoras, 2019; Veldkamp et al., 2020). Due to these structural features, escape games create learning situations where participation is not restricted to a single mode of engagement but instead enables learners to draw on diverse strengths and sensory modalities.

Inclusive learning requires learning environments that acknowledge learners’ diverse backgrounds, capabilities, and ways of engaging in the learning process. In adult education and lifelong learning contexts, learners differ in prior knowledge, motivation, learning histories, and life situations, which places demands on pedagogical solutions. Consequently, learning environments should offer multimodal and flexible opportunities for participation, rather than relying solely on linguistic or theoretical transmission of knowledge (Holloway & Gouthro, 2024).

Experiential learning provides a strong pedagogical foundation for inclusive approaches. According to Kolb (1984), learning is a continuous process in which knowledge is constructed through the interaction of concrete experience, reflection, conceptualisation, and active experimentation. This approach goes beyond passive reception of information, enabling multiple forms of participation while integrating cognitive, emotional, and practical dimensions.

Multisensory learning complements the experiential approach by offering learners multiple pathways for processing information and constructing meaning. Multisensory-enriched learning situations can be particularly beneficial in heterogeneous learner groups, where cognitive and practical strengths vary (Mathias & von Kriegstein, 2023). Learning environments that incorporate multisensory elements lower barriers to participation and

enhance accessibility, as learning extends beyond reading or listening to include doing, observing, and interacting. Such approaches also support strength-based learning, enabling different learners to draw on their preferred ways of participating and learning.

From the perspective of adult education, experiential and multisensory learning methods are especially significant, as adult learners benefit from authentic and practice-oriented learning experiences that connect with their prior experiences and personal goals (Sisselman-Borgia & Torino, 2017). These pedagogical approaches can strengthen motivation, engagement, and the perceived meaningfulness of learning in lifelong learning contexts.

Educational escape games have been used particularly in higher education and professional competence development. They have been shown to support learner engagement, motivation, and the experiential quality of learning (Fotaris & Mastoras, 2019; Veldkamp et al., 2020). However, educational escape games alone do not ensure a complete learning process, but require integration with other elements to support learning outcomes. Based on our observations from educational escape game implementations, escape games function especially well as part of a broader learning process in which experiential activity and reflection deepen theoretical understanding. In practice, learners first familiarise themselves with the relevant theoretical content, then apply their knowledge in the escape game through concrete and immersive activities, and finally deepen their learning through collective reflection after the game.

This structure appears particularly effective in adult education contexts, where the perceived meaningfulness of learning often emerges from the dialogue between theoretical knowledge and concrete action (Charlesworth, 2018; Mijal et al., 2020). For example, in teacher professional development, educational escape games have been used to deepen previously covered theoretical content, while post-game reflection supported the articulation of learning experiences, made competences visible, and reinforced theoretical understanding.

COLLABORATIVE LEARNING AND SOCIAL INCLUSION

Collaborative learning is grounded in the idea that learning is not an individual performance; instead, the entire group works together towards a shared goal, with learning occurring through active interaction. The importance of positive interdependence is emphasised, as group members recognise that their participation affects the success of others (Hellström et al., 2015). In educational escape games, collaborative learning is supported through deliberately structured tasks requiring equal participation from all group members. Because progress depends on collective effort, educational escape games strengthen the core principle of collaborative learning: positive interdependence.

Collaborative learning constitutes a key foundation for inclusion, as it is built on shared participation and collective activity. In educational escape games, inclusion is reinforced by multisensory and experiential structures that offer alternative ways of participating and draw on diverse strengths. In adult education, collaborative learning supports inclusion particularly because learning takes place through interaction with others. Each learner's role is meaningful, and group-based learning enables multiple perspectives.

From the perspective of self-determination theory, inclusion in adult learning is grounded in supporting three basic psychological needs: relatedness, autonomy, and competence. Inclusive learning can be promoted by strengthening a sense of community, supporting learner autonomy, and providing space for interaction (Deci & Ryan, 2000). Escape games are based on a shared goal principle in which the learning tasks and game structure guide participants towards a common objective achievable only through collaboration (Veldkamp et

al., 2020). As collaborative learning environments, educational escape games often include tasks that cannot be solved individually, requiring active interaction and diverse problem-solving strategies. In adult learner groups, collaboration does not always emerge spontaneously; thus, educational escape games provide a safe and structured framework that supports collaborative learning and the social nature of learning. The narrative dimension of educational escape games helps build an immersive frame for learning, promoting social inclusion by reducing group hierarchies and highlighting diverse strengths in achieving the shared goal.

Collaborative learning in educational escape games supports metacognitive collaboration within the group. This involves conscious monitoring, regulation, and evaluation of thinking and learning processes, as players share cognitive tasks during gameplay. Metacognition is evident when group members explain their reasoning to one another, construct shared understanding, and make decisions collectively (Papadopoulos & Tenta, 2021). In adult education contexts, collaborative learning deepens learning and promotes the co-construction of knowledge, as learners justify their viewpoints (Johnson & Johnson, 2014; Leppilampi, 2018). At the same time, it fosters conditions for inclusive learning, as peer support reduces uncertainty and encourages participation (Nzuza & Chitiyo, 2024).

By their very nature, educational escape games support collaborative learning and creative problem-solving. Within them, adult learners' diverse backgrounds, levels of expertise, and learning styles contribute to collaborative learning and enable the solving of escape game challenges by drawing on different strengths. When designing educational escape games, it is therefore important to ensure that tasks allow the use of varied competencies, such as logical reasoning, creativity, and technological skills, so that learner diversity actively supports shared problem-solving (Taraldsen et al., 2020)

ACTIVE AGENCY IN EDUCATIONAL ESCAPE GAMES

In adult learning, agency is closely connected to learners' perceptions of their own competence and their willingness to engage with uncertainty and challenging learning situations. Bandura's concept of self-efficacy emphasises that individuals' beliefs in their capabilities influence whether they are willing to try new approaches, take risks, and commit to the learning process (Bandura, 1977). Among adult learners, this process is often complicated by prior expertise and professional identity. The more strongly a learner identifies as an expert, the greater the likelihood of experiencing fear of failure or concern about having their competence questioned.

Consequently, participation in educational settings entails not only cognitive challenges but also a perceived risk of compromising expert identity and credibility, which may diminish the willingness to engage actively and share unfinished ideas. This dynamic has also been evident in our own implementations, particularly in escape game contexts addressing areas where participants have strong existing expertise, where pressure to perform flawlessly has increased uncertainty and reduced readiness for collective problem-solving.

However, uncertainty is not only a barrier to agency but also a central element of adult learning from the perspective of transformative learning. The literature on transformative learning suggests that learning is often triggered when previously held assumptions and certainties are challenged. Reviews of Mezirow's theory of transformative learning indicate that adult learners require so-called "disorienting dilemmas" to critically reassess and renew their thinking (Fleming, 2018). Research also shows that tolerance of uncertainty is associated with learners' engagement and resilience, which are key factors in lifelong learning among adults (Yu, Wang & Xia, 2022).

Because learning requires the ability to tolerate uncertainty and accept incompleteness, psychological safety is an essential prerequisite for adult learning. According to Edmondson (2014), psychologically safe environments enable individuals to take learning-related risks, express unfinished ideas, and make mistakes without fear of negative consequences. In adult learning contexts, psychological safety is particularly critical in group settings, where fears of evaluation or of compromising one's professional identity may lead to withholding questions, ideas, and mistakes essential for learning. Research shows that teams with high psychological safety learn more precisely because participants are willing to share uncertainty and explore solutions openly (Edmondson & Lei, 2014).

Educational escape games provide learning environments in which agency, psychological safety, and the handling of uncertainty can be practised simultaneously. A defining feature of escape games is that learners cannot predict how the game will unfold or which solutions are correct; progress therefore requires uncertainty, experimenting, and making mistakes. This normalises uncertainty as an integral part of the learning experience and prompts learners to accept incompleteness as a given condition (Rawlinson & Whitton, 2024). Unlike in many traditional learning situations, prior expertise and competence does not guarantee correct answers; instead, learning is constructed through shared experimentation and collaborative problem-solving.

The combination of theory, practical application, and error resilience supports holistic learning. Making and correcting mistakes is a natural part of learning, as learning from errors effectively deepens understanding and strengthens memory, especially when accompanied by feedback and reflection (Mera et al., 2022; Burch et al., 2019). The gamified frame of educational escape games creates a safe space for trial and error, as mistakes are framed as part of a collective solution process rather than individual shortcomings. A shared goal and a collaborative game setting support participation and encourage learners to attempt different approaches without the stigma of failure (Rawlinson & Whitton, 2024). Such error-tolerant and exploratory environments support psychological safety and strengthen adult learner agency by helping learners tolerate incompleteness, take learning-related risks, and view uncertainty as an integral element to learning rather than an obstacle.

CONCLUSIONS

In the context of lifelong learning, learning environments that support experiential and multisensory learning, collaborative learning and social inclusion, as well as active learner agency, are particularly significant for the implementation of inclusive education. This analysis is grounded in three complementary perspectives, which demonstrate that escape game pedagogy is not merely a gamified teaching method but rather an approach that actively advances inclusion in lifelong learning. Through these perspectives, escape game pedagogy emerges as an innovative practice that addresses core pedagogical needs and challenges of lifelong learning.

Inclusive learning requires pedagogical solutions that enable diverse ways of participation and learning. Educational escape games offer a flexible approach that combines experiential activity, shared problem-solving, and reflection. Multisensory and experiential elements support inclusive learning by providing adult learners with participatory ways of constructing knowledge. Collaborative learning further contributes to inclusivity through shared participation and positive interdependence. In educational escape games, the principles of collaborative learning are realised naturally, creating conditions for achieving shared goals by drawing on learners' diverse strengths. In adult learning, agency is fostered within psychologically safe environments where uncertainty and mistakes can be encountered

without threatening professional identity. Within escape game pedagogy, uncertainty and incorrect solutions function as elements that deepen learning and strengthen active agency.

While escape game pedagogy offers considerable pedagogical potential, its implementation involves important design considerations. Different implementation formats pose distinct challenges: physical escape games require careful attention to accessibility, whereas digital and hybrid formats may better accommodate diverse learner needs. Designing educational escape games is also time-consuming, particularly for educators new to the approach, and requires deliberate pedagogical planning to align gameplay with learning objectives. Moreover, escape games alone do not constitute a complete learning process; their educational value emerges when gameplay is integrated into a broader learning process, particularly through post-game reflection.

When thoughtfully designed and pedagogically integrated, educational escape games appear as flexible, adaptable, and multifaceted learning environments that can be applied to different educational contexts, target groups, and modes of delivery. This versatility makes escape game pedagogy particularly well suited to the needs of lifelong learning, where learning environments are expected to be versatile, participatory, and capable of responding to changing situations.

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