Creating an Escape Room Using Interactive Book in H5P

By Qiudi Chen, XJTLU Student Intern. November 2025.

Acknowledgement

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Introduction

In recent years, concepts such as Game-Based Learning (GBL) and Gamification have gained significant attention in higher education. Specifically, Gamification involves integrating game elements (e.g., points, badges, leaderboards) into non-game scenarios (e.g., daily work, learning management) as a "motivational tool" to boost participation. In contrast, Game-Based Learning (GBL) is a distinct educational approach that embeds learning goals into complete game activities. Simply put, it entails "learning through playing games," where the game itself functions as the "carrier of knowledge transmission." Notably, relevant studies (e.g., Muengsan & Chatwattana, 2024; Celasun & Kaya, 2025) have confirmed their remarkable effectiveness in enhancing student engagement and strengthening knowledge retention. However, the literature also highlights three core gaps in current practices that urgently require targeted solutions:

- Superficial theoretical integration: Some gamification tools merely stack elements, such as points and badges, without a deep alignment with core educational theories, including behaviorism and constructivism (Coelho & Abreu, 2025). This leads to a disconnect between "playing" and "learning," making it challenging to internalize in-depth knowledge.
- Insufficient adaptability for self-directed learning: Most existing resources are designed for classroom group activities, lacking scenarios that support students' pre-class preparation and post-class review (Moldez et al., 2024), thus failing to meet personalized learning needs.
- Weak knowledge application: Traditional online tools focus on passive receptive learning, making it challenging to effectively cultivate students' higher-order abilities, such as critical thinking and problem-solving (Lopez-Pernas et al., 2019), which is disconnected from higher-order learning objectives.

Educational escape rooms (see Fig.1), as an important branch of game-based learning, can precisely address these gaps. According to Lopez-Pernas et al. (2019), an educational escape room is "an immersive problem-based learning activity that integrates narrative puzzles with course content." It achieves deep theoretical integration through goal-driven

puzzle-solving tasks, adapts to self-directed learning via independently completable scenario designs, and strengthens knowledge application capabilities through practical puzzles.

Fig.1. Escape Room Template

The Interactive Book (see Fig.2) on the H5P platform is an ideal choice for creating such self-directed learning-oriented escape rooms. It is a non-complex programming requirement, flexible chapter structure, and rich interactive features that perfectly support the entire process of "theoretical integration - puzzle design - independent level-clearing," providing tool-based guarantees for addressing the identified gaps. We have developed this guide specifically for University of Liverpool staff, with a focus on supporting students' pre-class and post-class self-directed learning. It offers an actionable step-by-step framework to transform course knowledge points into an immersive escape room experience, aligning with the university's innovative, student-centered educational philosophy.

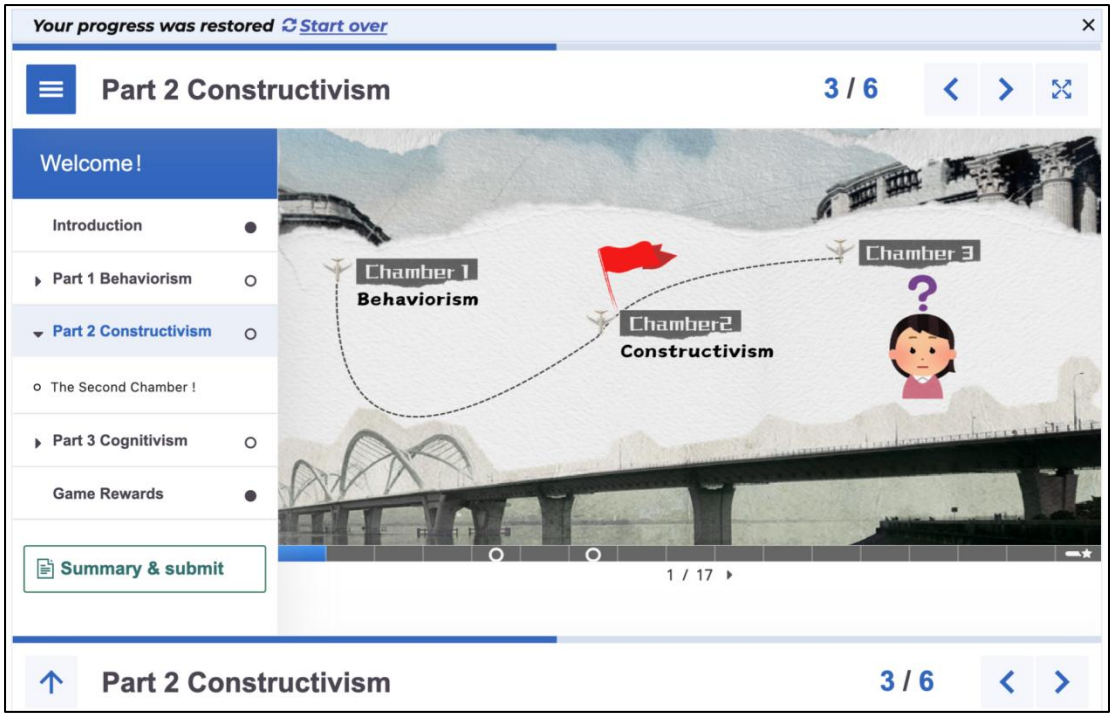

Fig 2. Interactive Book Template

Design Steps

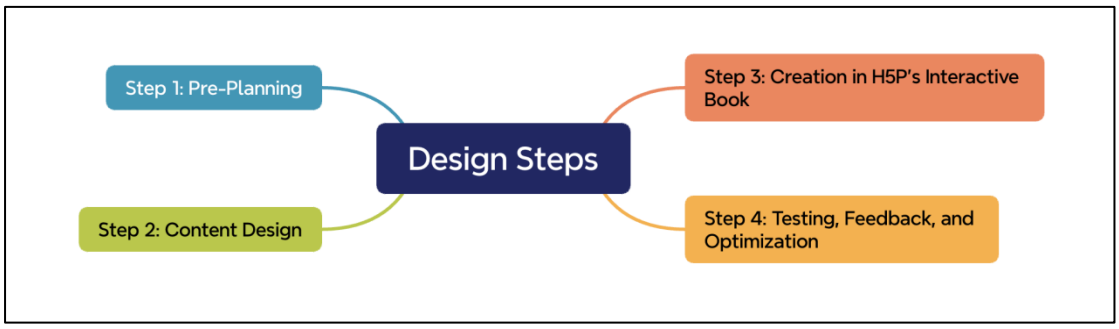

Fig 3. Design Steps for Immersive Escape Room Learning Activities

Step 1: Pre-Planning

Before conducting practical operations on the H5P platform, it is necessary to establish the core logic of "theory - objectives - game" to avoid a disconnect between theory and practice from the outset:

- **Align with core educational theories:** Identify 1-2 core educational theories (e.g., behaviorism's reinforcement mechanism, constructivism's situated learning theory) that the game will rely on. Ensure all game elements (puzzles, feedback, rewards) are designed around the theoretical logic (Coelho & Abreu, 2025).
- **Define clear learning objectives:** Referring to cognitive load theory, each escape room game should focus on 1-2 core knowledge points or skills (e.g., "academic

paper citation guidelines," "identification of reinforcement types") to avoid reduced learning efficiency due to objective overload (Muengsan & Chatwattana, 2024).

Step 2: Content Design

- **Construct a self-adaptable narrative background:** Create low-threshold independent scenarios (e.g., "Independently cracking the code of an academic laboratory," "Unlocking the secrets of core course knowledge points") that do not rely on multi-person collaboration. Ensure students can complete the game independently at any time and from anywhere (Moldez et al., 2024). Example: "You are trapped in the 'Course Theory Laboratory.' Only by completing the theoretical application tasks in 3 levels in sequence and unlocking the corresponding keys can you successfully 'escape' and master the core course knowledge points."
- **Content anchoring and pagination logic:** Split chapter pages according to core course knowledge points, with each unit comprising 2-3 pages that form a "theoretical explanation - puzzle application" unit. For example, in the "Academic Writing" module, pages 1-2 present "Key Points of APA Citation Guidelines," and page 3 directly embeds H5P fill-in-the-blank questions (e.g., "According to APA 7th, what is the correct format for citing journal articles?") to ensure a seamless connection between knowledge points and application scenarios.
- **Set feedback and reward mechanisms adapted to self-directed learning:**
    - **Immediate feedback:** Provide targeted explanations for each puzzle answer, not only indicating "correct or incorrect" but also linking to theories and literature (e.g., "Incorrect — This design does not provide external reinforcers required by behaviorism, which is inconsistent with the gamified learning incentive principles proposed by Widodo et al. (2025) and cannot stimulate sustained participation motivation"). Help students understand the nature of their mistakes independently.
    - **Progress rewards:** After completing each level, display visual prompts such as "Key Unlocked" or "Medal Earned" to maintain self-directed learning motivation through a sense of achievement (Celasun & Kaya, 2025).

Step 3: Creation in H5P's Interactive Book

- **Create a project:** Log in to the H5P platform (via the University of Liverpool's Canvas system or the H5P official website), select the "Interactive Book" template, set the game title (e.g., "Course Theory Escape Room: Unlocking Core GBL Principles"), and upload a thematic cover image (e.g., "A locked academic laboratory").
- **Build the level structure:** Each level is set as an independent chapter, including four sections following the logic of "Objective - Learning - Assessment - Feedback" to ensure the continuity of self-directed learning.
- **Mission Brief:** Clarify the level objective (e.g., "Identify the design flaws of this teaching activity and fix them using learning theories") and prompt the research

gap corresponding to this level (e.g., "This level will help you strengthen theoretical application capabilities and address the 'weak knowledge application' problem").

- **Core Course Content:** Focus on core knowledge points and theoretical key points, using concise and understandable language suitable for the fragmented scenarios of self-directed learning.
- **Puzzle Zone:** Insert designed interactive puzzles (e.g., H5P multiple-choice questions, drag-and-drop questions) to ensure high alignment between puzzles, knowledge points, and theories.
- **Reward & Next Step:** Display level completion confirmation and corresponding rewards.

Step 4: Testing, Feedback, and Optimization

- **Internal testing:** Invite 2-3 colleagues in the same field to focus on verifying two key dimensions — the alignment between puzzles and objectives/theories (e.g., "Does Level 3 effectively assess cognitivism-based information encoding capabilities") and compatibility across different devices (computers, tablets, mobile phones) to ensure a smooth experience in self-directed learning scenarios.
- **Student feedback collection:** After the initial release, distribute anonymous questionnaires via Canvas. Core questions focus on the effectiveness of gap addressing and user experience, including "Clarity of the connection between theories and puzzles," "Helpfulness of clues for self-directed learning," "Reasonableness of completion time," and "Degree of improvement in knowledge application capabilities."
- **Iterative optimization:** Adjust content based on testing and feedback, such as simplifying complex clues, supplementing theoretical explanations, and optimizing interactive logic. Ensure the game is both academic and user-friendly, effectively achieving the goal of addressing the identified gaps.
- **Launch:** Embed the optimized H5P Interactive Book into the university's LMS (e.g., Canvas) with a brief description (e.g., "This escape room game is a pre-class preparation/post-class review resource, expected to take 30 minutes. It is recommended to complete it independently. If you encounter problems, refer to the theoretical guidelines in each level to help you specifically address learning gaps").

Personal Tips and Practical Experience

Pre-Planning: After defining core educational theories (e.g., behaviorist reinforcement mechanisms) and key learning objectives, synchronously outline content visualization directions. Specifically, clarify which knowledge points to explain through text, which to supplement with schematic diagrams, and which to support with videos. Advance division of labor effectively prevents inconsistencies between theoretical logic and visual presentation in later stages.

Content Design: Avoid over-reliance on text for content presentation. Instead, combine theoretical schematics (e.g., Vygotsky's ZPD model diagram) and practical operation videos. Prioritize interactive video formats by inserting pop-up questions to enhance participant engagement. Additionally, include a table of contents at the beginning, clearly listing each module, its corresponding objectives, and estimated duration, to help learners grasp the structure and plan their study.

H5P Creation: Simplify page navigation logic during development by adding "Previous/Next Page" buttons and optimizing for touchscreen interactions. Conduct real-time tests on interactive accuracy (e.g., scoring logic for fill-in-the-blank questions) after inserting quizzes. Meanwhile, unify the visual style under the "Academic Laboratory" theme to enhance immersion and reduce cognitive load caused by inconsistent design.

Testing & Optimization: First, conduct compatibility tests across multiple devices and browsers while controlling single-page loading time. Second, include questions about content format and interactive effects in feedback questionnaires to collect targeted insights. Finally, implement incremental iterations based on feedback—such as splitting overly long videos or supplementing key points in the table of contents—to avoid disrupting overall logic with significant revisions.

Practical Examples of H5P-Based Educational Escape Rooms

To help University of Liverpool staff quickly grasp the practical application of the H5P Interactive Book escape room design framework, this section presents two typical cases from public platforms. Both cases embody the core concepts of "self-directed learning" and "knowledge-application integration" emphasized in the guide, serving as concise references for transforming course content into immersive learning experiences.

Example 1: Browse the book of berries
This case centers on berry-related knowledge. It features a navigable table of contents at the start; each chapter first delivers core content via tables and videos, then embeds interactive tasks such as multiple-choice questions and practical exercises, complemented by immediate feedback and a consistent visual style. It aligns with design requirements, including "adaptable scenarios" and "connection between theory and application." Staff can replace the thematic content to adapt it for professional course development.

Example 2: Create H5P interactive book (with chat GPT)
This is an H5P interactive video-based educational escape room. Its core lies in overlaying interactive elements during video playback. Based on a specific teaching theme, the video displays text annotations, links, multiple-choice questions, drag-and-drop sorting tasks, and other interactive activities as it plays. Learners must complete these tasks to unlock "codes" and progress to the next learning segment. Its advantage is transforming passive video viewing into active participation—leveraging the intuitiveness of videos to convey knowledge while using real-time interaction to assess learning outcomes. It is

suitable for asynchronous learning scenarios, particularly for course content that requires visual explanations (e.g., operational procedures, conceptual analysis).

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