

Hide and Seek in Gamified Learning: Formative Assessment of ESP in Digital Escape Rooms

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Abstract: *The assessment of language skills in the current online learning format entangles a complex process of also evaluating multiple competences and abilities (digital, literacy, visual, technological). If the digitalization of learning processes has become a stringent need nowadays, educators must also focus on adapting the mechanism of evaluation so as to be more inclusive, engaging and flexible. Gamification appears to be one potentially suitable instrument of delivering both teaching and assessment methods to learners who are coping more and more with disengagement and the lack of interaction. Digital escape rooms, as a complex version of gamified activities in ESP classes, provide a valid alternative to facilitating learning and assessment, while also granting learners the stimuli to make practical use of the acquired language (and soft) skills in customized and interactive problem-solving contexts. More than boosting motivation among students and extending autonomy through self-assessment and collaborative work, digital escape rooms can still be considered trailblazers in the field of higher education ES(A)P teaching and learning. Exploring the conundrums of these digital instruments, with both opportunities and challenges that might occur, can serve the purpose of understanding how gamification can support the pursuit of language skill acquisition, while for teachers, it can pave the way for organizing instructional and assessment content in a user-friendly format.*

Keywords: *gamification, digital escape rooms, engagement, formative assessment, learner autonomy.*

Introduction

In the context of shifting learning and teaching entirely towards a digital format both learners and teachers are expected to adapt content and methods to new challenges. Be they technology-based, pedagogy-related or rather methodologically oriented, the challenges that occur in the framework of teaching/learning ESP vary from difficulty in using digital tools, to reluctance to interact with others or to limited contextual learning facilities. However, online learning also brings forth promising opportunities regarding formative assessment and digital pedagogy paired with gamification as a holistic vehicle for an engaging learning experience.

With motivation as a core feature of engagement, students often find themselves missing the sense of belonging to a group that they shared with their peers throughout the language acquisition process. And in this digital context of trying to balance acquired skills and practical use of language, interactivity remains a valid format that can instill a sense of belonging in this respect. The applicability of testing language skills, along with allowing learners to explore the boundaries of their knowledge by practically engaging in problem-solving tasks and collaborative projects can take shape via gamification.

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The facilitation of game-based learning is at the core of gamification, understood as “designing information systems to afford similar experiences and motivations as games go, and consequently attempting to affect user behavior”¹. Digitally native learners require virtual contexts that allow them to practice their digital expertise and self-evaluate their use of language along the way. To answer this need, instructors face various challenges, stemming from adapting the contents of their disciplines to expanding assessment formats in such a way as to allow for more practice.

Gamification may provide an appropriate option to pair the demand for interactivity and digital expertise, on one hand, with the supply of assessment formats that teachers have at hand. “With gamification as a vehicle for formative assessment, there is an undeniable advantage regarding the outcome of evaluation. If in traditional and on-site formative assessment progress of ESP acquisition is reflected in the capacity to properly use grammar structures and specific terminology in conversations and role-played practice situations, the needs of digital natives change significantly. Namely, such learners will tend to escape such tedious routine practice sequences and call for a need to prove their networking capacity in the chosen field of study”².

Group work and interactivity are both essential features of assessing language acquisition in ESP classes and the possibility of embedding them into a gamified sequence also has the advantage of diminishing the evaluation stress that undergraduates often encounter. The particular purpose of the current paper is to identify the features, advantages and disadvantages that such gamified assessment strategies may have in the framework of digital escape rooms’ potential for ESP classes.

Peeping into the Digital Escape Rooms- a Gamified version of ESP Formative Assessment

Active learning is an inherent principle in online learning and, in the framework of formative assessment, the features provided by escape rooms, as complex gamified structures of learning can be very rewarding for learners’ motivation. “Escape rooms are one type of escape games, which are narrative-based challenges that use puzzles, tasks, and a time limit. Other types include puzzlehunts, breakout boxes, escape books, Augmented/Virtual Reality (AR/VR) escape rooms, or portable escape-rooms-in-a-box where most of the

¹ Jonna Koivisto, Juho Hamari, Haari Sarsa, “Does gamification work? -A literature review of empirical studies on gamification”, in *Proceedings of the 47th Hawaii International Conference on System Sciences*, Hawaii, USA, January 6-9, 2014, p. 206.

² Ioana Mudure-Iacob, “Assessment of ESP Language Acquisition through the Lens of Gamification”, in *Limbajele Specializate in Contextul Noilor Medii de Învățare*, Cluj-Napoca, Presa Universitară Clujeană, 2020, p. 95.

puzzles are contained in a box so that players can have the same immersive and challenging experience in the comfort of their home.”³

The popularity of escape rooms has easily moved into the online format, generating opportunities of interactivity and group or pair work-based learning among students. More particularly, the process of teaching/ learning ESP requires the practice of acquired skills in interactive contexts, so that learners may exhibit their knowledge and customize it according to the specific field of study. In numerous cases of teacher-student interactions, nonetheless, undergraduate students became more reluctant to interact freely from behind a screen and tended to resort to written use of language. In doing so, they lack the practice of using spoken language so as to activate learning structures, as well as affect the way in which formative assessment can be conducted by their teachers.

Using escape rooms as an educational mechanism of engaging students in active learning contexts, without them feeling the pressure of being assessed, is surely an opportunity for teachers. Moreover, in the case of ESP teaching, where the evaluation of language acquisition involves assessment of all four skills, such breakout rooms are fruitful resources for generating rich learning experiences. An educational escape room is considered to be “an instructional method requiring learners to participate in collaborative playful activities explicitly designed for domain knowledge acquisition or skill development so that they can accomplish a specific goal (e.g., escape from a physical room or break into a box) by solving puzzles linked to unambiguous learning objectives in a limited amount of time”⁴.

With escape rooms in a digital format, there is also the question of using digital pedagogy as a means of adapting teaching and learning by using a balanced mixture of digital tools and methodological approaches. “The term ‘digital pedagogy’ should not be conflated with the deployment of ‘digital tools’. Rather, the term refers to learning-focused values that have relevance not just for subject-specific education, but to personal and social processes and relationships and systems intrinsic to the learning process .”⁵ Despite the fact that the pedagogical dimension attached to escape rooms is rather recent and slightly experiential, the benefits that learners gain are important.

³ Panagiotis Fotaris, Theodoros Mastoras, “Escape Rooms for Learning: a Systematic Review”, in Elbaek et. al.(eds) *Proceedings of the 13th International Conference on Game Based Learning*, ECGBL Academic Conferences and Publishing International Limited, 2019, p. 235.

⁴ *Ibidem*, p. 237.

⁵ Valerie Anderson, “A digital pedagogy pivot: re-thinking higher education practice from an HRD perspective”, in *Human Resource Development International*, 23 (2010), no. 4, DOI: 10.1080/13678868.2020.1778999, p. 463; A. D. Manea, C. Stan,, „Online communication,” in *European Proceedings of Social & Behavioural Sciences*, 12 (2016), p. 317-323, DOI:10.15405/epsbs.2016.12.1.

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Varying from a more autonomous approach to language learning to social interaction (even if in an online format) and to motivating learners to pursue language acquisition, escape rooms can be valuable resources to conduct formative assessment digitally. They may replace the gamified quizzes that become, at some point, tedious and that lose the motivational drive that learners expect. “It is generally assumed that this kind of educational game may involve learners in active learning since it helps students to retain and apply the knowledge they have learned in a game. Moreover, it can inspire learners to self-regulate their learning process, help them reflect upon how the learning connects to their own lives, and develop their intrinsic motivation.”⁶

The functionality of digital escape rooms for ESP relies heavily on crafting the suitable combination of tasks- which vary from puzzles, crosswords, quizzes, audio-video recordings- to allow for a holistic assessment of the four skills (reading, listening, writing, speaking). If most gamified quizzes such as Kahoot! Quizizz, Quizlet allow for a generous evaluation of vocabulary and grammar features, in the case of ESP and ESAP digital breakout rooms learners must also prove their proficiency in the other language skills. Thus, participants will be asked to interact with their peers and unlock hints in order to advance through the escape rooms, the strategy being to encourage them to interact orally. Likewise, the content of tasks can also be designed so as to allow for customized assessment of speaking skills, by including tasks that require them to record themselves in audio-video formats as breakout tickets.

The scaffolding of individual skill evaluation is a significant advantage of using digital escape rooms as a mechanism of formative assessment for more reasons. Firstly, learners are benefitting from a gamified experience of learning and respond to the task through the filter of game mimicry, with increased participation and less pressure of coping with a traditional form of evaluation. For instance, the integration of a digital escape room section meant to test listening skill acquisition will enable students to shift from being mere listeners (as in the case of a traditional listening quiz) to becoming active players.

Examples of such digital breakout tasks could include listening and watching an audio- video material that hides particular hints which players must later on decipher to unlock the next stages of the game. Similarly, they might also be required to show proof of having unlocked breakout levels by recording video messages on various platforms (Flipgrid, YouTube, Vocaroo). Such scaffolding of tasks allows for a more comprehensive assessment mechanism, by evaluating both listening and speaking skills.

Furthermore, to integrate the assessment of reading skills in digital escape rooms, as part of an overall evaluation of language acquisition, students

⁶ Ángela Gómez López, “The use of escape rooms to teach and learn English at university” in Pérez Aldeguer S., Akombo D.O.(eds) *Research, Technology and Best Practices in Education*, Eindhoven, The Netherlands, Adaya Press, 2019, p. 94.

can also be presented with a variety of tasks. Namely, the instructor can embed reading comprehension requirements by hiding locks in texts, by having learners process information in order to answer particular questions or by reordering excerpts in order to reconstitute a coherent text, to name just a few examples.

Eventually, to cover the assessment of writing skills, types of activities that digital escape rooms may include refer to requiring students to write emails/ proposals/articles or more simple patterns of writing tasks, such as linking words completion, rephrasing tasks or chart/image descriptions. Any of these activities call for active engagement and challenge learners to use their vocabulary and writing skills, while also serving as valuable transferable material for further practice.

Moreover, there is the possibility of organizing escape rooms in different manners -"an open structure (different puzzles can be solved at the same time), sequential structure (solving one puzzle unlocks the next, until the final puzzle can be solved), path-based structure (several paths of puzzles; paths are independent, like the open structure, between them until the end, with a sequential structure inside the path) and complex, hybrid structure, which may take the form of a pyramid."⁷ Such scaffolding of tasks, according to content or level of difficulty allows for a more accurate formative assessment framework and, more importantly perhaps, it brings forth the tremendous benefit of allowing students to progress at their own pace.

There is, nonetheless, at least one significant limitation regarding formative assessment via digital escape rooms that needs to be mentioned. For instance, such assessment is difficult to quantify in grades, as it implies group-work and sequential tasks, the framework being different than a traditional quiz/test or project. Applying a grading system to escape room assessment formats is also problematic, as the evaluation criteria must include several elements other than the language-based ones.

One important feature of evaluation is "quantification which takes in turn two main forms: school grade and rating. Grading therefore requires looking at school performance for certain features corresponding to the ideal reference model of that performance, using a rigorously constructed scale. The rating, just like the grade, expresses the level of congruence between school performance and docimological standards as a conventional form, except that in this case the method of coding is not numbers, but one based on linguistic formulations such as "very good" "satisfactory" etc. [...] the evaluator also uses a

⁷ Mario Grande-de-Prado; Sheila García-Martín; Roberto Baelo; Víctor Abella-García. "Edu-Escape Rooms" *Encyclopedia* 1, no. 1: 12-19, 2021, <https://doi.org/10.3390/encyclopedia1010004>.

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measurement scale, which in this case is not represented by intervals, but by ordinals”⁸.

In the case of digital breakout rooms rating appears to be more suitable, with the particular feature provided by gamification in general—that of rewarding participants/ learners with badges/ prizes or leaderboards as acknowledgement for their work. Since formative assessment is a dynamic process of ongoing evaluation, it is not necessarily problematic that grading and rating of escape room activities cannot be used as fixed criteria of assessment. There are however numerous other benefits that learners may derive from participating in these gamified sequences, such as increased motivation, group interactivity, self-assessment or critical thinking patterns.

Behind locked doors- Opportunities and Challenges of Including Escape Rooms in digital ESP classes

A digital escape room, as formative assessment framework for online teaching and learning, impacts learners on multiple levels throughout the gamified experience and afterwards. Despite the fact that the quantification of assessment in this format has been scarcely documented, the effects these gamified patterns have on learners are worth investigating. The features of breakout rooms imply access to multiple and varied activities and tasks, stimulation of competitiveness similar to gaming, motivation booster and activating student engagement and promotion of critical thinking and socio-emotional learning. “Unambiguous feedback, rewards and increased complexity (levels or progressive challenges) scaffold the learning process. The feature interactivity is related to collaborative learning. Both concepts refer to arrangements that involve two or more students working together on a shared learning goal.”⁹

Moreover, in order to complete the challenge, students must prove they hold a series of skills and abilities- from linguistic, communicative ones to digital and social skills. Assessment is therefore pluralist and revolves around gamification, learner engagement, problem-based learning and individual or collaborative work. While looking for clues and hints in order to unlock the sections of the breakout room, learners are under the spell of game-based exhilaration. This means they basically replace the pressure that usually comes attached to forms of assessment with the thrill of seeking clues or winning a game in a virtual competition.

There is, in this respect, a win-win principle at stake: on one hand, learners become actively engaged in the process, as unlocking the digital escape

⁸ Cristian Stan, Adriana Denisa Manca, “The Divergent Relationship between Assessment and Self-Assessment in Higher Education. Experimental results”, in *Procedia - Social and Behavioral Sciences*, 209 (2015), p. 498.

⁹ Azita Abdul, Patrick Felicia, “Gameplay Engagement and Learning in Game-Based Learning: A Systematic Review”, in *Review of Educational Research*, 85(4), p. 753.

room is actually tantamount to completing different stages of learning (reading, solving vocabulary tasks, speaking and communicating, watching and listening topic-based materials). On the other hand, teachers can use the experience as a means of formative assessment, grasping a picture of the level of language skills, of the speed of solving tasks and putting these in the larger frame of soft skills that are deemed necessary for online learning.

Furthermore, one important dimension to consider when designing a digital escape room is the role of the teacher, which can vary from “1) monitoring, 2) guiding, 3) providing hints, and 4) debriefing. In the studies, the assigned role varies from one aspect to all aspects.”¹⁰ The assumed roles easily shift according to the type of escape room challenge, as in on-site breakout rooms it might be easier for a teacher to play the part of a monitor or guide, being in the actual location that players have. Nonetheless, the digital format can also substitute such roles using videoconference platforms in the case of synchronous activities of escape rooms. As for the teacher as hint provider, such a role can be interpreted both as stimulating for learners-as it triggers motivation to pursue their challenge- or, on the contrary- it can be frustrating for participants who prefer to repeat attempts at breaking the lock before being indicated the solutions.

One notable advantage of digital breakout rooms would be that it also allows for asynchronous participation of learners, who are required to solve the tasks/puzzles and finish the challenge with little to no simultaneous guidance from their instructors. In such cases, the teacher’s role is significantly altered, as the responsibility of the teacher would be to introduce the challenge and explain procedures- often through a screencast or audio-video support material and eventually to organize a debriefing session, preferably synchronously. The actual intervention of the teacher is considerably reduced, giving learners more self-control of the gamified environment and encouraging them to work actively in teams/ groups.

However, one cannot oversee the limitations that result from conducting an escape room challenge in an asynchronous format. “Replication in an asynchronous setting may require additional activities (e.g., reading comprehension) and more effort to check-in with students who opt to work independently, fail to seek help when it’s needed, and/or do not participate.”¹¹ Moreover, it is more likely for students to abandon the challenge in an asynchronous context, because of lack of guidance or because of repeated failed attempts, which might render the escape room activity less efficient.

¹⁰ Alice Veldkamp, Liesbeth van de Grint, Marie-Christine P.J. Knippels, Wouter R. van Joolingen, “Escape education: A systematic review on escape rooms in education”, in *Educational Research Review*, 31 (2020), 100364, <https://doi.org/10.1016/j.edurev.2020.100364>, p. 5.

¹¹ Kallianne L. Neumann, Frances Alvarado-albertorio, and Andrea Ramírez-Salgado, “Online Approaches for Implementing a Digital Escape Room with Preservice Teachers”, in *Jl. of Technology and Teacher Education*, 28 (2020), no. 2, p. 420.

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For students enrolled in ESP classes, specific difficulties they might encounter refer to reluctance to record audio-video responses, lack of comprehension for audio or written materials, increased difficulty in unlocking hints either because of the level or because they do not comprehend instructions. It is advisable in this respect to double the effect of the escape room challenge by always organizing a debriefing session- that is to go through the tasks and challenges and reiterate the type of content that was evaluated. Similarly, for such challenges to be more efficient, teachers should also work closely with students after the completion of the digital breakout session in order to discuss the issues they encountered and thus establish together the aspects that require revision. This way, assessment becomes more precise, as it pairs the objective evaluation of the teacher with features of self-assessment conducted by learners.

Regardless of the synchronous or asynchronous manner of participating in a digital escape room challenge, one major contribution that gamified learning experiences provide refer to being motivation boosters and promoters of active learning. Some of the educational uses of digital escape rooms can include “improving problem-solving skills, learning to think and learning by doing, developing the imagination.”¹²

Similarly, learners are invited to use critical thinking throughout the challenges embedded in digital escape rooms, which requires them to activate their abilities to analyze, evaluate and use theoretical input in order to solve clues and unlock hints. Other than using the language skills they are being evaluated for, participants will need other specific abilities, from problem solving skills, to attention to details and good communication skills, to team work and time management skills. Having to use a combination of these skills within one digital breakout room activity in the ESP class verifies the premise that online formative assessment needs to take a holistic approach. “These assessment “methods are very efficient in terms of learning and they foster divergent thinking and stepping out of one’s comfort zone, which results in rewarding and inspirational experiences for teachers and learners alike.”¹³

Conclusions

Assessment of learning is best conducted through performance and seeks to show what learners can do with the knowledge, skills and abilities they

¹² Mario Grande-de-Prado; Sheila GarcíaMartín; Roberto Baelo; Victor Abella-García., *Edu-Escape Rooms. Encyclopedia* 2021, 1, 12–19. <https://dx.doi.org/10.3390/encyclopedia1010004>, p. 14.

¹³ Stephens de Jonge, Julie; Labrador, Belén, „Fostering critical thinking and motivation through digital escape rooms: preliminary observations,” in Mirjam Hauck, Andreas Müller-Hartmann (eds), *Virtual exchange and 21st century teacher education: short papers from the 2019 EVALUATE conference*, 2020, p. 157-164. <https://doi.org/10.14705/rpnet.2020.46.1141>, p. 163.

acquired. The criteria behind formative assessment account for educational practices, different and innovative instructional methods, active learning and observation of learners' progress according to their pre-established learning goals. Adding the framework of gamification to this type of assessment paves the way for learners to define their learning trajectory with intrinsic motivation, critical thinking and the sense of belonging generated by team/ group collaboration.

With students working to improve their ESP skills, the functionality of formative assessment is partially supported by the use of innovative and interactive digital tools such as digital escape rooms. Designed as online controlled environments for learning, educational breakout rooms can provide resourceful contexts for assessing language skills and for uncovering learner understanding. Whether the advantages of using them throughout the process of evaluation refer to granting more learner autonomy, to allowing for a complex form of assessment of language skills or to diversity in teaching methods, students are highly stimulated by such gamified alternatives.

Despite showing limitations as well (increased time and effort investment, incomplete rating and grading features of formative assessment, risk of having students give up or interrupt the assessment challenge) the impact escape rooms may have on learners is far more relevant. And since the current trends of testing teaching and learning as blended, hybrid or online formats are here to stay, participating in interactive, innovative and sometimes unknown challenges can only stimulate and engage both learners and teachers. It is, after all, a hide and seek version of teaching and learning foreign languages, in which "finding" the other players is tantamount to building bridges between theoretical knowledge and practical skills.

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