Escape boxes: bringing escape room experience into the classroom

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Extended abstract

Escape rooms have been finding their way into education worldwide (Breakout EDU, 2018; Sanchez & Plumettaz-Sieber, 2018). Escape rooms are live-action team-based games in which players encounter challenges in order to complete a quest in a limited amount of time. The quests in the first-generation games were 'escapes' from a room. Nowadays, the quests vary, players may solve a murder mystery or break into a vault (Nicolson, 2015).

Parallel to their immense popularity in the entertainment industry, escape rooms are gaining popularity as teaching and learning environments. It is remarkable that the design of the educational escape rooms started bottom-up with enthusiastic teachers who have shared their materials on platforms, such as, Breakout EDU (Breakout

EDU, 2018; Sanchez & Plumettaz-Sieber, 2018). Their aim is to create escape rooms to explore an active learning environment which is said to increase pupils' motivation and/or engagement and fosters learning while using or developing team work and communication skills (e.g. Borrego, Fernández, Blanes, & Robles, 2017; Cain, 2019; Hermanns et al., 2017).

Apart from its educational potential, the escape room concept has the potential to create hybrid learning spaces (Trentin, 2016); emerging, amongst others, individual and collaborative learning as well as physical and digital spaces (Köppe, Nørgård, & Pedersen, 2017; Stommel, 2012; Zhang, 2008).

Acknowledging its educational potential, teachers have formulated limitations and boundary conditions for escape rooms in education on aspects of pupils' learning, teachers' guiding skills, and usability in classrooms, such as short set-up and reset-times in between classes (e.g. Cain, 2019; Hermanns et al., 2017; Veldkamp et al., 2019, submitted).

In this design-based research, we explored the implementation of escape rooms in education. Hereby, the leading research question was: how can the escape room concept be adapted to education, taking into account limitations of educational settings and boundary conditions set by teachers?

The paper describes the process leading to the design criteria, the design process. The resulting technology-enhanced escape boxes have become hybrid learning spaces, merging individual and collaborative learning, as well as physical and digital spaces, as seen in figure 1. The design of the box with assignments on each side, wants to set students face to face to each other and require them to collaborate in the physical world instead of being individually absorbed in a digital world.

The preliminary results with the technology-enhanced escape boxes are promising. The boxes meet the design criteria set. The exterior and content of boxes can be re-used and adapted by the teacher. The box with content-based puzzles, makes it more feasible to set up, reset, and clear away an escape room in a limited time. Puzzles can be developed in a way that learners recognize the knowledge and skills needed to solve the content-based puzzles. The hybrid learning spaces in the form of technology-enhanced escape boxes, succeed in putting learners in direct physical contact with each other, stimulating them to collaborate in a physical world due to shape of the boxes, and the organization and design of the puzzles. The puzzles required combining information uncovered by different subgroups. The immersion into the game context was enhanced by the digitally driven narrative. Learners can be confronted and immersed in real world situations, such as socio-scientific issues, e.g. deadly zoonoses or plastic soup. Structuring of the game through the digitally unfolding of the puzzles and pre-set hints diminished help from the teacher. However, developing adequate pre-set hints appears to be complex and it did not rule out the need for help.

The paper discusses the playtest results, the role of the design criteria in the design process, the escape box as a hybrid learning space and recommendations for designing educational escape rooms.

Figure 1a. Design of the final box, with top 'open' to show inner structure. Figure 1b. Box ready for play and 4c. after play.

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