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Designing an Educational Escape Room for the new Humanitarian Engineering Master's Programme at the UT

This thesis is concerned with the design of an educational escape room (EER) for the new Humanitarian Engineering (HE) Masters Program at the University of Twente. In recent years, interactive learning methods have gained popularity over traditional teaching methods. There are many types of interactive learning methods, and one of them is the implementation of educational escape rooms (EERs). EERs can be classified as a serious game and one of the main frameworks for designing a serious game is the MDA (Mechanics, Dynamics, Aesthetics) framework, which will also be given attention to in this thesis. Additionally, multiple frameworks support the design of this EER, but the primary one employed in this thesis is the EscapeED framework, specifically tailored for EER design.

Even though there has been significant research regarding EERs, notably by Nicholson (2016), there is a notable gap in the application of EERs within the context of humanitarian engineering (HE). Therefore, this thesis aims to explore this gap by integrating insights from the fields of education (traditional and modern teaching), EERs, humanitarian engineering (HE), gamification, and serious games as well as market analysis which was performed on games that are typically used in standard escape rooms. Hence, the key findings have been used to come up with design requirements that can be further used to design the EER in question.

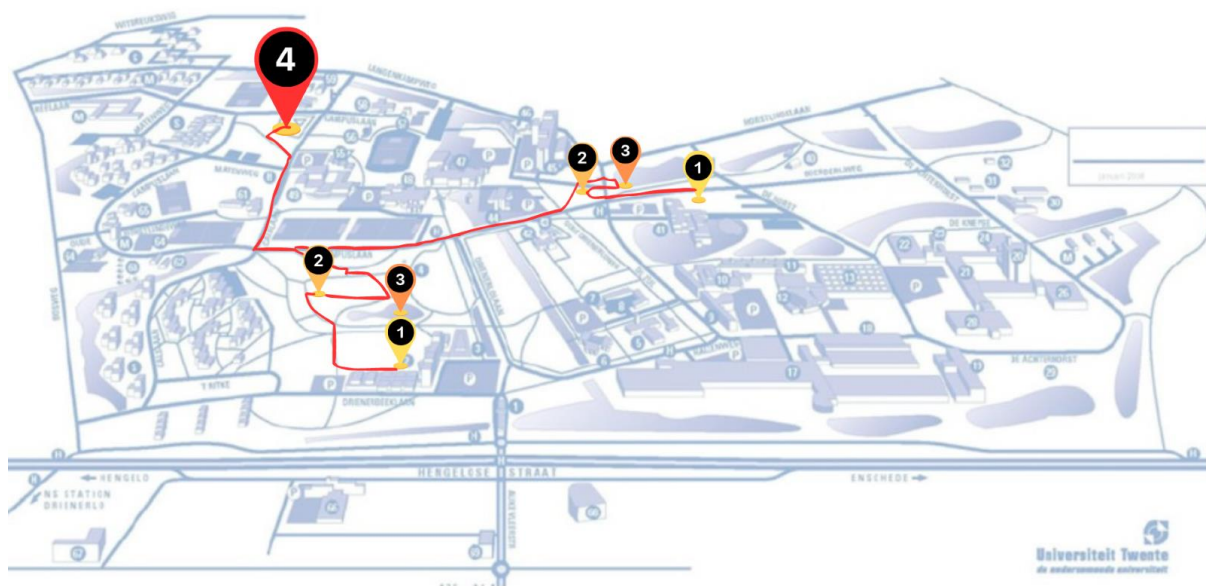
Hence, the main research question this thesis seeks to answer is: *“How can an educational escape room simulate working in the humanitarian engineering field and get students at UT familiar with the challenges, working, and living conditions in marginalized and underserved communities?”*.

This project aims to develop an educational escape room *that allows students to experience and understand the challenges, and living environment of marginalized and understand communities*. This game is intended for master's students at the University of Twente who will be joining the new Humanitarian Engineering Master Program, set to launch in 2025. Through the use of gamification and serious gaming strategies, the EER intends to give students a vivid, experiential understanding of diverse cultures and the challenges they face. This immersive learning tool is intended to enhance the educational experience by combining entertainment with real-world insights, making it an innovative approach to learning in the academic setting.

For students who may not have the opportunity to travel to these communities, the EER offers a valuable alternative, simulating life in underserved areas without physical travel. Also, this EER will be part of the first introductory course of the master's program hence, the student will have minimal to no prior knowledge and that is something that is also taken into account in this thesis.

This thesis primarily focuses on conducting a literature review and market research to establish design requirements for the EER. Due to the feasibility and constraints of this project, developing physical prototypes is outside of the scope of this project, making this thesis predominantly research-based. Hence, the final outcome is an initial blueprint for the EER, which serves as a conceptual foundation for future development. This blueprint integrates essential elements designed to provide students with an immersive and engaging experience in the field of HE while also considering the learning objectives of the course that this EER is intended to be part of. Furthermore, it was designed to take place across the UT campus, where user interaction and cognitive ergonomics were considered to strategically position the puzzles. The game is intended to be played by two teams simultaneously, requiring them to communicate and collaborate while navigating different parts of the campus, ultimately merging at the final location to solve the last puzzle together, as illustrated in the accompanying blueprint.

Recommendations for future development include the implementation of real actors instead of NPCs, introducing red herrings, incorporating gender-based roles, and ensuring the game's accessibility for players with disabilities. A noted limitation was the inability to develop physical prototypes, which would have allowed for a more refined design and more accurate time estimates. As a result, the time required to complete the EER was based on theoretical estimates rather than practical testing.



References:

Nicholson, S. (2016). *Peeking Behind the Locked Door: A Survey of Escape Room Facilities*. <http://scottnicholson.com/pubs/erfacwhite.pdf>