GAMIFICATION OF TERRAFORMING OF MARS USING HYPERDOCS AND DIGITAL ESCAPE ROOM AS INNOVATIVE PEDAGOGICAL TOOLS IN EDUCATION. Sz. Kárpáti1,2, H. Hargitai3, Sz. Bérczi4, A. Gucsik1, 1Eszterházy Károly Catholic University, Eger, H-3300, Eszterházy tér 1, Hungary, 2Petőfi Sándor Roman Catholic Elementary and High School of Vecsés, H-2220, Vecsés, Petőfi tér 1, Hungary (e-mail:nyuliszilvia@gmail.com), 3Eötvös Loránd University, Faculty of Social Sciences, Budapest, 1088 Múzeum krt. 6-8, Hungary 4Eötvös Loránd University, Faculty of Natural Sciences, Budapest, 1117 Pázmány P. sétány 1/a. Hungary

Introduction: The importance of play in psychological development is widely recognized among developmental psychologists and educational professionals. It plays a key role in cognitive and affective skills, abilities, moral development, social skills and personality development [1].

Knowledge transfer focusing on active activities and skill development in addition to traditional knowledge transfer is of paramount importance, because changes have also occurred in the field of labour market needs, and the development of skills promotes flexible adaptation [2]. This is important mainly because as a result of the spread of digitalization, students' attitudes and motivations are also changing, thus teachers are expected to use more efficient methods [3].

The game-based learning process has a positive effect on the development of critical thinking, debating skills, and decision-making [2]. By integrating mobile devices into education and consciously designing the teaching process, it is also possible to develop skills that go beyond application to focus on analyzing, evaluating, and creating [4].

During education, digital escape rooms can be used for all subjects when processing a topic or lesson [5]. Application possibilities of the series of tasks embedded in the exciting story: repetition at the beginning of the lesson, summary at the end of the class and closing the topic, differentiation, catching up and talent management. This abstract aims to show how learners' skills, abilities and competencies can be developed with the help of a digital escape room.

Discussion:

Escape room structure:

Terraforming Mars requires considerable prior knowledge in many areas. The game is based on Discovery of Mars HyperDocs, which covers five main themes, as follows (Fig. 1) [6].

1. Characteristics
2. Survey
3. Morphology
4. Maps
5. Terraforming.

Through HyperDocs tasks, students develop their communication, intellectual, scientific, social and personal competencies [7]. In addition to the digital space, the completion of topics and tasks is also realized in real space, thus providing an opportunity for creativity to fully unfold.

During the design process, it is also possible to achieve a higher level of requirements determined by the Bloom taxonomy [8].

MARS is a digital escape room, based on the application of previously acquired knowledge.

In the course of meeting the challenges, the concepts and connections already learned will be deepened and expanded. During the design of the escape room, additional information and help support the slower progressing students, so even those who did not solve the tasks of Discovery of Mars.

During the game, students encounter various challenges. In addition to completing the tasks, the code necessary for moving forward must be put together with the help of various logical tasks.

A digital escape room consists of mixed-structure, sequencing, and route-based structures [9] To solve puzzles, students need skills such as searching, observing, correlation, memorization, critical thinking, pattern recognition, and reading, math, and digital competences. Since the escape room is built on the knowledge contained in Discovery of Mars HyperDocs, completing challenges means not only winning the game, but also a positive summative assessment.
Summary: Digital escape rooms can transform any lesson into an engaging learning environment [10]. It can be used effectively primarily in summary lessons, but the repetition and consolidation of a larger topic can also be excellently realized with the help of the game. Students are motivated to use their mobile phones in class and experience learning as a positive experience through play. At the same time, teamwork, competition and reward inspire students. Using a cooperative form of learning, all members of the group can actively participate in the game and help each other through the learning process.

Application of innovative measurement and evaluation technologies, with the help of which continuous, immediate feedback can be easily solved. The use of digital games for educational purposes is extremely motivating. Increased motivation can contribute to increasing motivation to learn [1], to making people love a particular area, to the emergence of self-directed forms of learning, and thus to the improvement of academic performance.

The three main areas of 21st century skills, according to the International Cooperation Assessment and Teaching of 21st Century Skills, focus on learning and innovation skills, information, media and technology skills, and life skills and career skills. [4]. Within these areas you can read several skills for the development of which digital games are well suited.

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