Escape games in the teaching of chemistry. Mini review

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Abstract

In the last decade, we have observed an extreme increase in studies devoted to the use of games in education (Raitskaya & Tikhonova, 2019). One of the forms that can be used in the gamification process is an escape game. At the moment, it is difficult to estimate whether this is a dead end - hype, or whether this form of education will be a regular part of the educational process. A number of authors agree that there is a need for empirical research that would describe the benefits or shortcomings of escape games in education (Lathwesen & Belova, 2021; Makri et al., 2021; Taraldsen et al., 2022). In the conference contribution, we focus on the classification of escape games used in the teaching of chemistry, which was carried out on the basis of a literature search. The first criterion that can be chosen for the division of escape games in chemistry is the form. Chemistry as an experimental science offers to create a real laboratory escape room. In these cases, students solve theoretical and practical tasks in the laboratory (Avargil et al., 2021; Peleg et al., 2019; Vergne et al., 2019). The second most common variant is a virtual escape game that uses LMS systems, available computer applications, or it is a whole computer game (Abdul Rahim, 2022; Cai, 2022; de Souza & Kasseboehmer, 2022; Estudante & Dietrich, 2020; Roy et al., 2023). They are most often prepared for high school students (Avargil et al., 2021; Cai, 2022) and university students (Abdul Rahim, 2022; Clapson et al., 2023; Musgrove et al., 2021; Roy et al., 2023; Vergne et al., 2019). The games frequently deal with one topic, such as the periodic table (Yayon et al., 2020) chemical bonding, (Ang et al., 2020) or soda ash making. (Dietrich, 2018; Estudante & Dietrich, 2020). On the other hand, there are also games that combine several topics, for example redox processes and thermodynamics (Clapson et al., 2023). In our presentation, we will also focus on specific puzzles that can be used in escape games, as well as show examples of mysteries that take place in the background of games. Some articles also include research that focuses on the benefits of escape games for developing 21st century skills, developing cooperation, creativity, problem solving, and more.

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Keywords

escape game; chemistry education; gamification