

5 - Teaching-Learning Sequences as Innovations for Science Teaching and Learning | Empirical

SP - (16404) - A CHEMICAL ESCAPE ROOM - A FUN TOOL FOR DEVELOPING 21ST CENTURY SKILLS

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Short Abstract

Escape rooms are a form of gameplay reported to be highly beneficial in promoting science education among students. The authors developed chemical escape room activities that are highly popular among both students and teachers. Participants in the chemical escape room usually report a sense of "flow", perseverance in achieving goals, collaborative effort, and excitement, all while utilizing their chemistry knowledge to solve puzzles concerning chemistry. The aims of this study were to validate a newly developed questionnaire and to use it for assessment of students' perceptions regarding the contribution of the chemical escape room activity to the framework of 21st century learning. The results suggest that the students' perception of contributing to the escape room activity was positively correlated with all attitudinal aspects assessed including their perception of teamwork, self-efficacy, existing knowledge, sense of flow, instilling of knowledge, sharing, respect and mutual caring, as well as perseverance in finding a solution. In addition, differences between the genders were found: although girls begin the activity with a lower perception of their abilities, they finish the activity with a higher one than the boys do. A validated tool was developed to assess future encounters of students with the chemical escape room and to assess how the students perceived its contribution to the development of 21th Century skills. This study, by evaluating the escape room's effectiveness, could assist researchers and educators who are planning to incorporate a chemical escape room in their teaching activities.