

Escaping the environmental crises: Online escape rooms for evaluating student lab data analyses skills

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Abstract: Formative lab assessments probe student mastery over concepts, but conventional ones such as quizzes and midterms often increase student anxiety and disengagement. If conventional formative lab assessments are replaced by “game-ified” evaluations, such as online escape rooms, this may lead to improved student confidence and engagement. While escape rooms are mostly for entertainment in the commercial sector, they have recently been implemented as in-person and remote lab activities to reinforce the importance of teamwork to navigate a series of puzzles of various difficulty to exit the room. In this work, we adapted two sustainability themed virtual escape rooms (**Figure 1**) to evaluate data analysis skills in Integrated Chemistry I (CHEM 381) over three semesters at CSU, Chico. After the online escape room assessments, 60% of the students rated their confidence as “high” or “very high” in all categories assessed, compared to 25.6% before the experience. 90% of students earned full credit based on the completion under 60 minutes, which is the regular time allotted for an in-person escape room. Overall, 80% of the written comments included positive feedback. Students found that the escape rooms were a less stressful method of assessment and were more engaging than the traditional exam as they worked towards a sustainability themed goal and competed for the quickest time to complete the escape rooms.

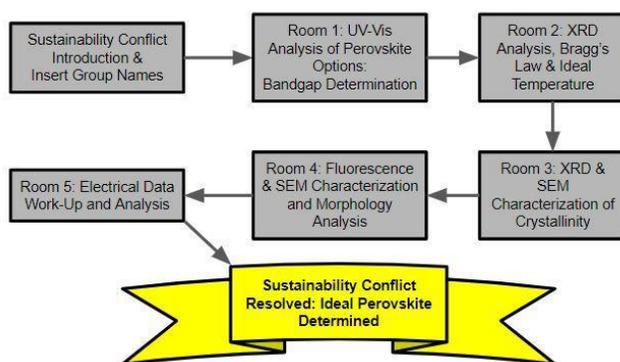


Figure 1. Flow chart of the escape room process for the use of assessing a student group's data analysis techniques in the solar cell lab.