Who Wants to Pass Chemistry II Laboratory

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Abstract: A PowerPoint presentation that functions as a review quiz for students in second-semester freshman chemistry laboratory, in the format of the television game show *Who Wants to Be a Millionaire* is described. My students and I have "played" the quiz during laboratory recitation periods in the week before final examinations for the past two academic years. The quiz has sustained several modifications and upgrades in that time and exists now in an entertaining yet academically beneficial form. The PowerPoint file may be downloaded at http://www.emporia.edu/~roachjim or at *The Chemical Educator*'s Web site.

Introduction

The use of games in college-level chemistry courses is gaining in popularity, as evidenced by the numerous game-oriented publications that have appeared in the literature in recent years [1–10]. Several of these games are adaptations of popular board games [5] or television quiz shows like *Jeopardy* [6] and *Who Wants to Be a Millionaire* [1]. Because of the hierarchical nature of chemistry, continual exposure to fundamental concepts is essential and the game format is a well-suited reinforcement technique.

About the Game

Students are divided into teams of four or five and seated at "hot desks" at the front of the classroom. A team spokesman is selected and each team then answers a series of five questions that get progressively more difficult. A projection system displays each question and four possible answers. The team works together to select their choice from the four possibilities. The game features lifelines similar to those on the television program: 50–50, which removes two of the wrong answers; Poll the Audience, which allows the audience to select a choice by a show of hands; and Ask Dr. Keck, which plays an audio file of a colleague explaining the answer to the question. Teams are allowed to use each lifeline only once. The game also includes audio files of the *Who Wants to Be a Millionaire* introduction, Poll the Audience music, and "thinking" music. Features of PowerPoint allow pushbutton icons for music and lifelines to be displayed on each slide.

Because our typical laboratory class size is twenty, there are five sets of questions. The entire PowerPoint presentation consists of over eighty slides, which include the question, a slide for each question with two of the wrong answers removed, and a slide with only the correct answer remaining. Another convenient feature of PowerPoint allows the game's MC to select an icon that brings up the slide with the correct answer at any time. Also the Ask Dr. Keck sound file is often played even when a question has been answered correctly so that all students in the classroom have an opportunity to hear an explanation. In addition to these sound files, slides have been inserted between questions to provide visual explanations. For example one of the questions requires use of Beer's law and following the answer slide for this question Beer's law is displayed along with an explanation for the question. A feature of PowerPoint even allows for an animated exchange of reactants and products as part of an illustration of Hess's law. In this way the game promotes erudition for both audibly and visually oriented learners.

The questions cover concepts from both first- and second-semester freshman chemistry. Question topics include solubility, rate laws, acids and bases, and thermochemistry. Because of the Poll the Audience lifeline, even students not in the hot desks typically play along. As further incentive, I place a few of the game's questions on the final examination verbatim.

Conclusion

The game has been both an informative and entertaining means of reviewing freshman chemistry concepts . In their course evaluations students often cite the game as their most enjoyable class period. By using the existing presentation as a template, adaptation for other classes is simply a matter of writing new questions and explanations.

Supporting Materials. The PowerPoint file is available in a 2.4-MB Zip file (http://dx.doi.org/10.1007/s00897000637b) or at http://www.emporia.edu/~roachjim.

References and Notes

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