

Limestone Rescue

By Yann Brouillette

Description:

In this single-class activity, students rescue six researchers that have been captured and exposed to a potentially deadly chemical reaction. Through a case study, students learn to apply inductive reasoning to generate a problem-solving heuristic and learn skills of knowledge application and analysis and evaluation of solution. See a full description [here](#).



Out of Class (Instructor)



Out of Class (Students)



In Class (Instructor)



In Class (Students)

Introduce Activity

- Assign students to groups of 3-4
- Assign a multi-step problem. This takes the form of a rescue mission, involving captives held in an enclosed space risking asphyxiation due to a reaction between limestone (CaCO_3) and acetic acid

Initiate Problem

Access online resources to:

- Collect information
- Set up the problem
- Make necessary unit conversions

Solve the Problem

At a whiteboard or SMART board, solve the problem step by step.

Analyze Work

Compare and contrast own work with that of other groups to determine the completion of the required steps. If not, correct the work.

Prepare Flow Chart

Prepare a flow chart on the white or SMART board for solving the multi-step problem.

Review Flow Chart

Peer review the flow chart of one other group.

Modify and Upload Flow Chart

- Take peers' suggestions into account and finalize the flow chart
- Upload flow charts to an online collaborative platform

Analyze, Apply, and Finalize Flow Chart

- Online, compare and contrast flow charts posted by all groups and prepare a finalized version for personal use
- Apply steps outlined in flow chart to solve questions and determine whether own procedure is robust, revising it as necessary

Note: Employ the flow chart for the remainder of the semester, and use it as a study guide for future examinations.

Legend

Context Icons:

- Individual Work
- Work in Groups

Task Icons:

- Gather Information
- Problem Solve
- Analyze
- Assess/Review Peers
- Revise/Improve
- Write
- Instructor Orchestration