

The scenario

Subject	Chemical reactions/Acid-base reaction
Length	5:19
Main objectives	To create an erupting volcano
Detailed objectives	
Structure and description of experiments:	
1. Introduction	Description: The motivation for the experiment is to prepare an erupting volcano and explain the acid-base reactions
2. Main subject	Description: Why does mixing vinegar and NaHCO_3 create an eruption? What type of reaction occurs?
Part 1	
(0:40), Experiment 1 (0:40),	<p>Tools: Clay, NaHCO_3, vinegar, colorant</p> <p>Description: Make two „volcanoes“ with the clay. mix NaHCO_3 and colorant and add to the volcano. You can use two different colors if you want, and you can create different colored eruptions in this way. Add some vinegar into the slot of the volcano. And make the volcano erupt.</p> <p>The water in the vinegar acts as a host where the base and acid react. During the reaction, when the baking soda is mixed with the vinegar, the baking soda (Base) takes a proton from the vinegar (Acid). The reaction causes the baking soda to transform into water and carbon dioxide. Carbon dioxide is a gas which is released during the reaction, which gives it the bubbling effect, and it expands.</p> <p>Questions: What reaction occurs? – Acid-base reaction. What is in vinegar that causes the acid-base reaction with, NaHCO_3 to occur?</p> <p>Conclusions: When vinegar and NaHCO_3 are first mixed together, hydrogen ions in the vinegar react with the NaHCO_3 ions in the baking soda. The result of this initial reaction are carbonic acid and sodium acetate. The second reaction is a decomposition reaction. The carbonic acid formed because of the first reaction immediately begins to decompose into water and carbon dioxide gas.</p>
3. Summary, evaluation and notes	<p>Application: Used in cleaning (refining) metals, in the maintenance of swimming pools, and for household cleaning. Used in car batteries, and in the manufacture of fertilizers. Used in the manufacture of fertilizers, explosives and in the extraction of gold. The main ingredient in vinegar.</p> <p>Level: primary school (ISCED 2 / 6th, 8th grade)</p>

