Incorporation of OER Interactive Simulations in Chemistry

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Problems

- Abstract concepts, difficult to visualize
- Atomic and molecular scale

Goals

- Increasing student engagement through interactive simulations
- Utilize open education resources (OER)
  - No additional cost to students

Ways to Incorporate Simulations

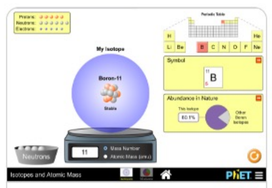
- Guided inquiry to introduce a new unit
- In class activity/homework to reinforce concepts
- Game mode to gauge learning

PhET Interactive Activities

https://phet.colorado.edu/

Acid-Base Solutions

Reactants, Products and Leftovers

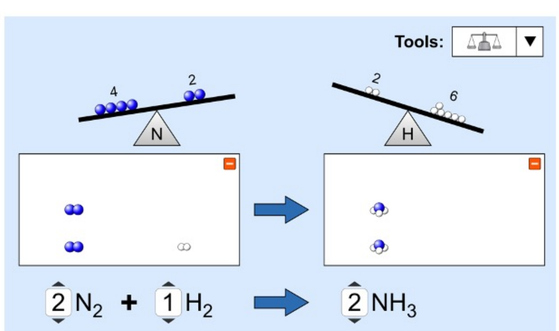


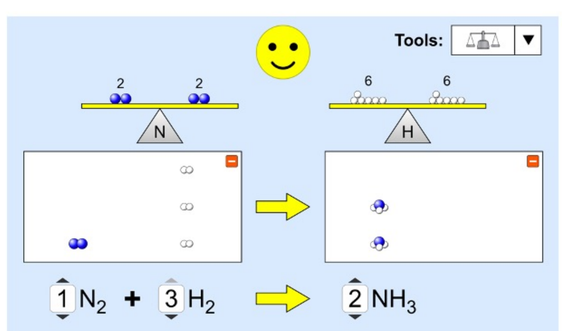
Isotopes and Atomic Mass

Gases Intro

Exploration with Feedback

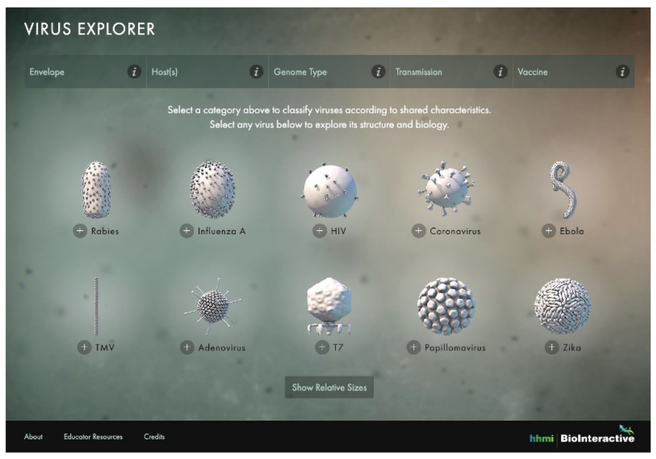
https://phet.colorado.edu/en/simulation/balancing-chemical-equations





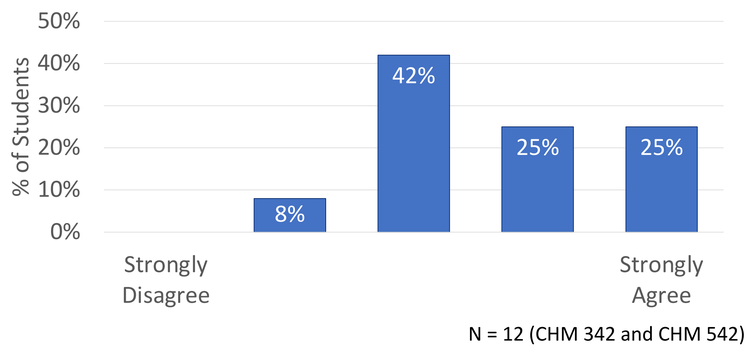
HHMI Click & Learn

https://media.hhmi.org/biointeractive/click/virus-explorer/



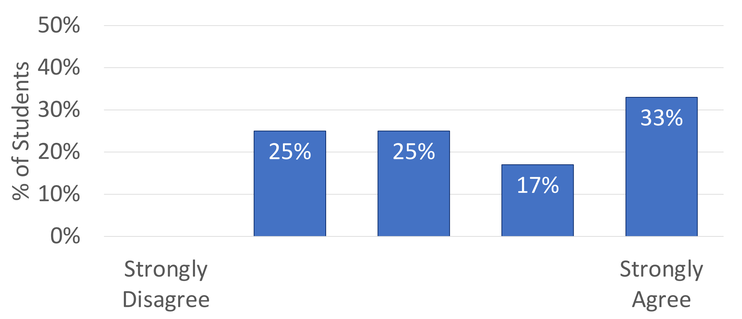
Student Feedback

The interactive was beneficial to my learning



N = 12 (CHM 342 and CHM 542)

I found the simulation engaging



N = 12 (CHM 342 and CHM 542)

67% of students strongly agreed that this type of activity should be an open education resource

Future Considerations

- Collect data on student learning, outcomes, and perceptions
- Design and incorporate additional guided inquiry activities
  - CHM 251 – Build a molecule (PhET)
  - CHM 252 – Citric acid cycle and fat digestion (HHMI)