

Flipping CHE 101 to an active learning environment

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Relevance increases retention

- Integrating practical applications in course work promotes student engagement thus increasing student success.
 - SCALE-UP
 - “Flipping the classroom”

CHE 101 – Introduction to General Chemistry

- Approximately 150 students a year take this course. Divided into lectures with 20-40 students.
- Predominately first year students
- 15-20% DWF rate

- Inherent challenges
 - Time consuming
 - Unprepared students
 - Limiting course content
 - Learning environment

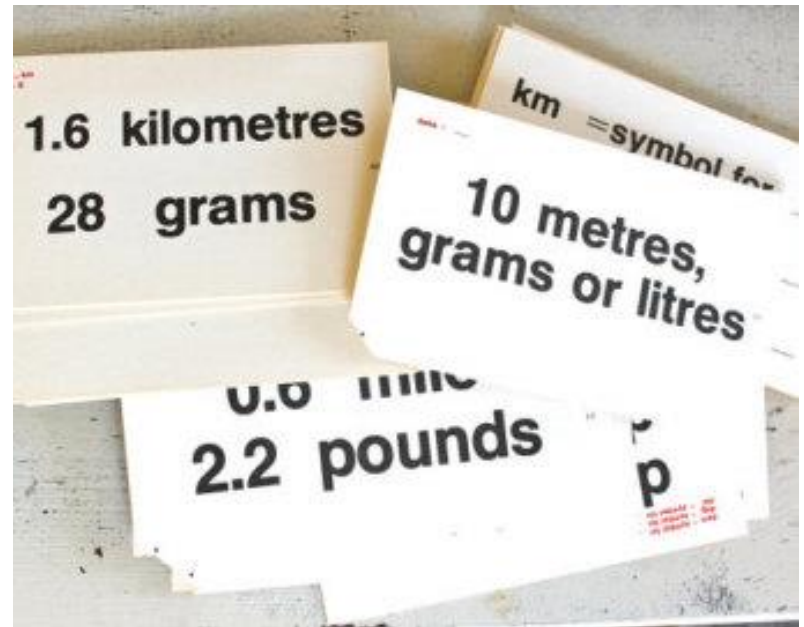




Picture credit: www.ncsu.edu Scale-up classroom

Day 1: Make flash cards for metric prefixes

- Informal student survey indicated that 1/3 of students had not used flash cards since elementary school.
- Quizlet or Memrise

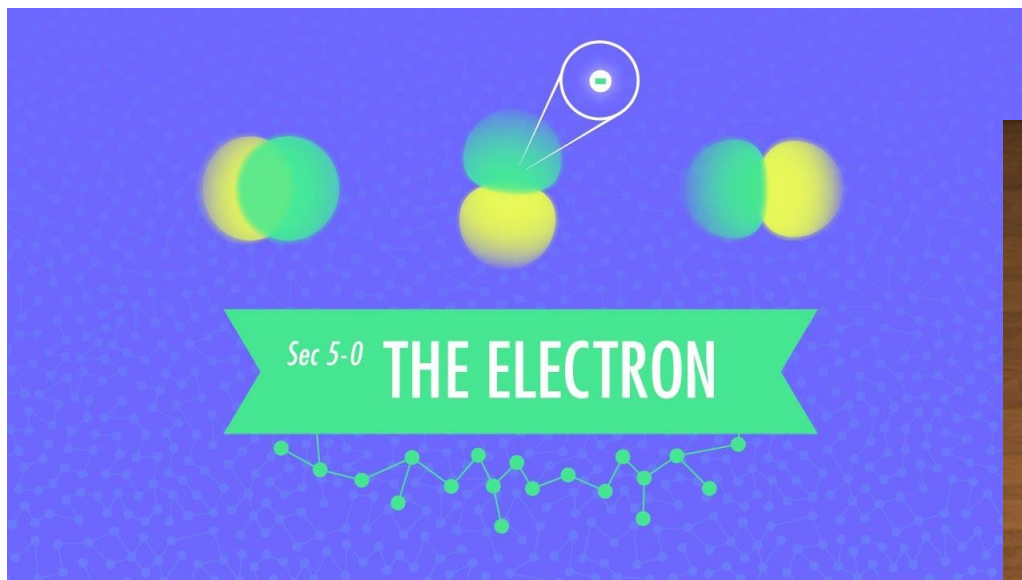


Density Study

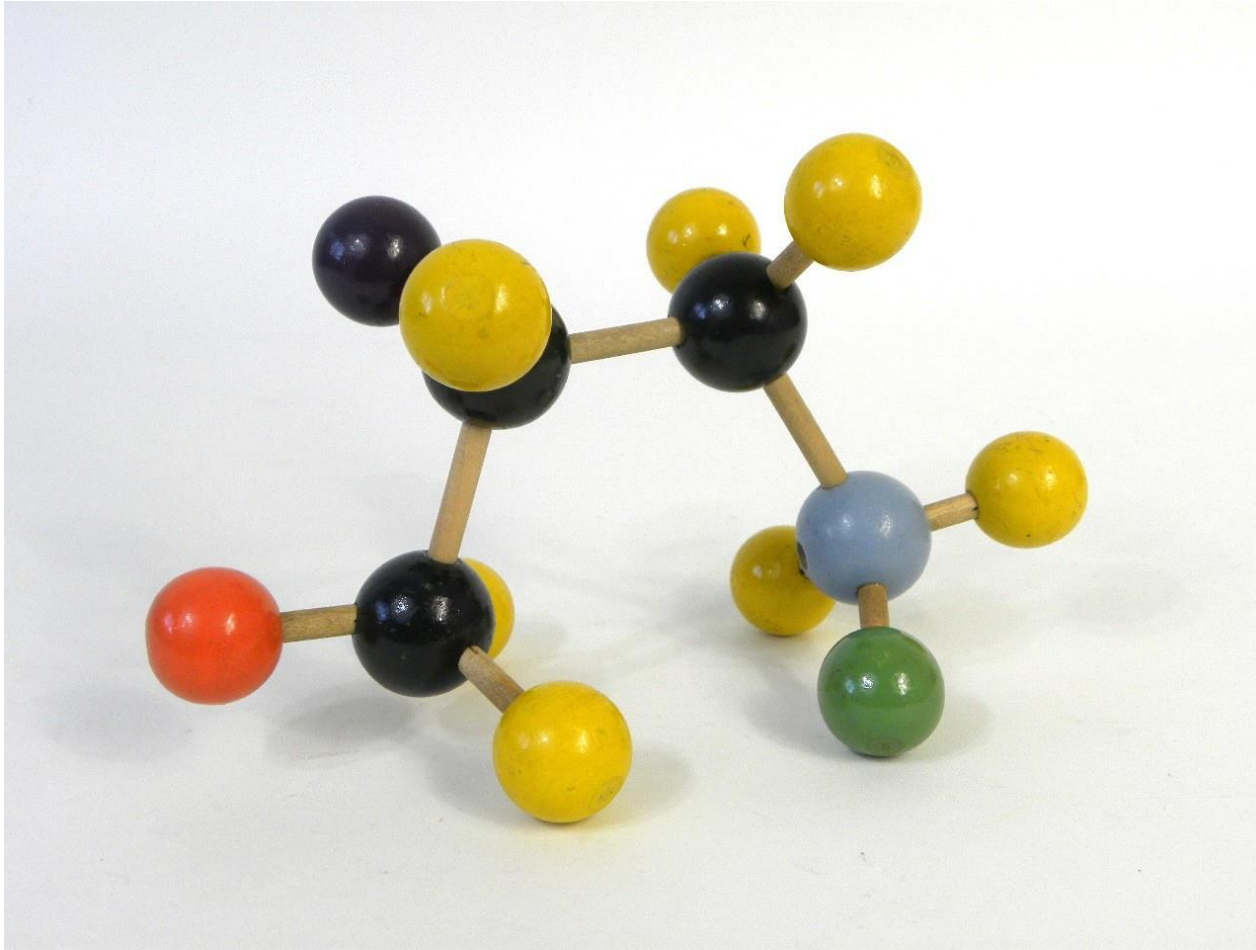


1. Why does the diet soda float and not the regular soda?
2. Briefly describe how you would test your hypothesis from question 1.
3. What difference in ingredients in the sodas would affect how the cans float in water?

Video Assignment on Electron Configuration



Picture credit: Crash Course Chemistry
www.youtube.com



Molecular Modeling

Name: _____

CHE 101

You are given a piece of wood that is maple, teak or oak. The piece of wood has a volume of 100cc and a mass of 98g. What is the identity of the piece of wood given the following densities?

Maple = 0.70g/cc

Teak = 0.98g/cc

Oak is 0.85g/cc

A cube is 3 cm on each side, if its mass is 326 mg, what is its density in g / cc?

What is the mass of a femur (leg bone) having a volume of 118cc? The density of bone is 1.8g/cc.

Iron has a density of 7.8 g / cc, what would be the mass of a 4.4 cm³ piece?

What is the volume of a sample of mercury that has a mass of 20.5 g. The density of mercury is 13.6 g / cc.

Outcomes

- Activities took longer than anticipated.
- Many professors who transition to these methods mention changes in their evaluation scores.
- Students appeared to have a better understanding of chemistry concepts.
- Students are forming closer relationships to their peers.
- No failing grades submitted for the term, however more students dropped the course.