

Atomic Structure Class: Tom Pratuch

Teacher's Guide

Goals

- To learn about the structure of the atom
- To use students' misconceptions in order to teach correct concepts

The Class

In this class, Mr. Pratuch presents a common misconception about atomic structure which arose due to a wrong model of the atom on the school's banner. He shows it to the students on purpose to make them find the discrepancy, and thus strengthens their existing knowledge about the modern model of the atom.

Lecture Notes

When you initially came to Annandale, what was the first thing you saw about Annandale, or even knew, from middle school? Your school planner has an atom on its cover.

What's wrong with that atom? List some things which are not realistic about it.

Where's the nucleus? There is a big "A" in the middle—"A" for Atoms.

What do you think was, in previous years, the biggest mistake that people made when asked where the electrons, protons, and neutrons go (on the energy levels)?

They would say: How many orbitals do I have? *Three (one each for protons, neutrons, and electrons)*. And they would not understand why they were failing chemistry.

Today, have we firmly established where the protons, neutrons, and electrons are? Well, perhaps some of you have gotten this point and still feel a little fuzzy about this?

Teaching Tips From Mr. Pratuch

I gave them a quote at the beginning of the year from Cardinal Woolsey that goes: "Be careful what you put into that head, because you will never, ever get it out."

If they see the Annandale Atom a long time before I teach them chemistry, it takes a lot of work to get it out, as a model.

References: Readings

Giunta, C.J. (2001) "Using History to Teach Scientific Method: The Role of Errors," *Journal of Chemical Education*, Vol. 78, No. 5, pp: 623-627.