Electron Configuration: Stools Game

Advanced Preparation:

Locate 20 lab stools or chairs Find a place with enough room to correctly set up the chairs (i.e. hallway)

Procedure:

1. Have students arrange the stools based on the diagram below.





2. Explain the following rules

- Students will line up and maintain the same order throughout the game.
- NO TALKING
 - The teacher will read the Stool Game directions to the students.

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- If a student sits on the wrong stool then the teacher will begin reading the Stool Game directions again.
- All students sitting on a stool must return to the end of the line and the next students in line cannot sit on a stool until the teacher is through reading the directions.

3. Once the students are in a line, the teacher reads the Stool Game directions.

4. Say "GO!" and start the timing process.

5. Pay attention to how students are sitting down on the stools, the second a student sits on the incorrect seat immediately start reading the directions again.

6. Once the students have correctly filled all stools the timer stops.

Background: By following the stool game rules the students are learning how to correctly fill electrons on an orbital filling diagram. The Stool Game Directions include the following rules in Chemistry:

<u>Aufbau's Rule</u>- electrons enter the lowest available energy level that is not filled

Hund's Rule- electrons will take empty orbital positions, each spinning in the same direction first, before doubling their occupancy

Pauli Exclusion Principle-two electrons maximum will occupy each orbital and will take on opposite spins when paired

Stool Game Directions

The name of the game is stools, Ready? Here are the rules:

The stools are placed in a pair. Find the seat on the closest row and sit down there.



If the closest row is filled, you move t o the next row to be seated.

If there are 2 or more pairs of stools in a row, only 1 stool in each pair can be occupied before the pairs can be completed.

All the pairs must be complete before you take a seat on a new row. Partners on a pair of stools must face opposite directions, and that's fo sho. Jordan Bell, Texas Tech University, CISER, 2014