Lesson Title	Classifying Matter Game
Length of Lesson	1 day
Created By	Kimberley Leggett
Subject	Science
Grade Level	10^{th}, 11^{th}, 12^{th} (Chemistry)
State Standards	Chemistry: 2a
DOK Level	DOK 2
DOK Application	Organize; compare; distinguish; identify; match
National Standards	9-12: B: Physical Science
Graduate Research Element	Properties of matter are relevant to my everyday research

Student Learning Goal:
Physical Science: 2. Demonstrate and understanding of the atomic model by explaining atomic structure and chemical bonding: (a) Describe and classify matter based on physical and chemical properties and interactions between molecules or atoms. Physical properties (e.g., melting points, densities, boiling points) of a variety of substances; Substances and mixtures

National Science Education Standards of Content 9-12
B: Physical Science: Structure and Properties of Matter:

- Solids, liquids, and gases differ in the distances and angles between molecules or atoms and therefore the energy that binds them together. In solids the structure is nearly rigid; in liquids molecules or atoms move around each other but do not move apart; and in gases molecules or atoms move almost independently of each other and are mostly far apart.

Materials Needed (supplies, hand-outs, resources):
Two different colors of paper to copy game pieces on to; States of Matter Activities sheet located at http://www.collaborativelearning.org/statesofmatter.pdf

Lesson Performance Task/Assessment:
Use the state of matter activities to identify solid, liquid, and gasses. The first game is a solid, liquid, and gases picture game which has short descriptions that have to be matched with the picture of a solid, liquid, or gas. An extension activity to the previous is to organize the cards into two different categories: 1. which describe what we find by observing solids, liquids, and gases. 2. Which ones describe how the 'particle theory' explains these observations? The last game is a connect-four game with pictures of different solids, liquids, and gases against descriptions of these things. These will be set up as small groups to play to allow for some discussion.

Lesson Relevance to Performance Task and Students:

To enhance the student's ability to identify between different types of matter and how they behave with the use of the games mentioned above.

Anticipatory Set/Capture Interest:
Facilitate a discussion on the different types of matter and their behavior hopefully using the smartboard.

Guided Practice:
Instructor will review a lesson on the different types of matter and their behavior. Instructions on how the games are played.

Independent Practice:
The students will be split into small groups to play the different types of games demonstrating the differences between solids, liquids, and gases. This allows for group discussions on the different types of matter and how they behave. The instructor will be moving around to clarify any misunderstandings.

Remediation and/or Enrichment:
R: Individual IEP; partner help throughout lesson; shorten to fewer games
E: Can complete all games and give more detailed descriptions

Check(s) for Understanding:
The games will be played by the instructor in front of the class near the end so no one leaves with any misunderstandings of the states of matter and their behavior.

Closure:
Explain how these different states of matter show up in our everyday lives and why it is important to know the differences between them.

Possible Alternate Subject Integrations:
Physical Science – when investigating chemical and physical properties of matter

Teacher Notes:
I will be adding homogenous and heterogeneous to all of the games since mine is for high school chemistry.
States of Matter Activities sheet located at
http://www.collaborativelearning.org/statesofmatter.pdf