Lesson: Biomes- (utilizing cooperative learning groups)
Length: 90 minutes
Grade Intended: 10th grade- Biology I

Academic Standards:
Standard B.1.40 Understand and explain that like many complex systems, ecosystems tend to have cyclic fluctuations around a state of rough equilibrium. However, also understand that ecosystems can always change with climate changes or when one or more new species appear as a result of migration or local evolution.

Standard B.1.43 Understand that and describe how organisms are influenced by a particular combination of living and nonliving components of the environment.

Performance Objectives:
Provided the opportunity to work on a poster project rather than listen to an hour of lecture, students will actively participate in the biome activity 100% of the time.
Upon getting into self-selected groups of three people, students will fairly split up the assignment amongst themselves with 80% accuracy.
Given at least 30 minutes in the computer lab or library, students will research their biome (animals, plants, location, and environmental conditions) with 90% accuracy.
Given supplies, students will create a poster project representing their biome and the information that they found.
Given 5 sheets of paper, students will create a foldable covering the biomes that were covered in class today with 90% participation.

Advanced Preparation by Teacher:
Consult Computer Lab instructor or Librarian to determine what day is available for research.
Determine 3-4 academic websites in which students will be able to look for information.
Obtain supplies (markers, magazines, glue, poster board) for making poster projects.
Research and create own poster project of one of the biomes as a model of what is expected.
Obtain 5 sheets of paper/person for making foldables.

Procedure:
Introduction/Motivation:
In journals, have students write down what they know about the word “biome”. (Bloom’s Knowledge)
Ask students to share their answers aloud with their classmates. (Gardner’s Interpersonal)
Ask: What biome do we live in? (Bloom’s Knowledge)
Develop explanation through their understanding of the new vocabulary word and write definition on the board. (Bloom’s Synthesis)
Step-by-Step Plan:
Discuss the different locations of biomes and why it is difficult to determine their barriers - aquatic and terrestrial. (*Gardner’s Logical and Spatial, Bloom’s Knowledge*)

Have students split into groups of three.
Assign each group a biome to research.

Using resources, either in library or internet, have students search for the approximate physical location, environmental conditions, and plant and animals species that live in this biome. (*Gardner’s Linguistic and Logical, Bloom’s Synthesis*)

Students should take notes over their findings. (*Bloom’s Application*)
Discuss within the group to determine their findings and to develop their ideas of what to put on the poster. (*Gardner’s Interpersonal*)

Students will divvy up who will do what part of poster and work together to create their masterpiece. (*Gardner’s Interpersonal and Spatial, Bloom’s Application and Synthesis*)

Upon completion of the poster projects, students will discuss with their classmates what they found out about the biome they studied. (*Gardner’s Interpersonal*)

Students will take notes over the presentations to develop knowledge of all of the biomes. (*Bloom’s Synthesis*)

Students will individually create foldables of the biomes that we discussed in class today using their notes from the presentations and textbook for information. (*Bloom’s Comprehension, Analysis, and Synthesis and Gardner’s Intrapersonal*)

Closure:
As a class, have students describe the climate difference, plant and animal differences, and physical location of each of the terrestrial biomes moving from tundra to rain forest. (*Gardner’s Interpersonal, Bloom’s Comprehension*)

Ask students to identify differences in biodiversity between the temperate forest biome and the tropical rainforest biome. (*Bloom’s Analysis and Gardner’s Spatial*)

For tomorrow’s journal, have students think about why tropical rainforests (and not temperate forests) are being cut down at such alarming rates. (*Bloom’s Analysis*)

Adaptation/Enrichment:
Multiple hands-on activities
Various ways for students to learn and develop understanding of new vocabulary
Incorporating art and technology to classroom
Use of multiple resources, instead of just textbook which some may struggle to understand

Self-Reflection: