Consider Standards in Global Education

Standard

NGSS HS-PS1-3: “Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles”.

Integration of Global Education

- Students will recognize the influence of different types of manmade materials on societies around the world.
- Students will gain insight into the connection between materials science and cultural and global technological developments.
- Students will investigate the world beyond their immediate environment and form a historical perspective on the advancement of society directly correlated to material science.
- Students will recognize that different people and cultures, throughout time, have made the discovery of materials throughout the world.

Lesson Plan Modifications

- Students will research the history of manmade materials to gain knowledge about the chronological advancement of materials with time, from the first plastics to fullerenes.
- From the historical perspective of materials, each group will pick one material they believe has greatly impacted the human race.
- Students will analyze a variety of materials for strength, purpose and usage around the world. Students will study the chemical reactions these materials are involved in the products of these reactions.

Informal Assessment

- Students will create a short video about the material they selected to research and why they believe it to be the most important material to society.
- The class will hold a debate, and each student will cast a vote on which material has had the greatest influence on the human race. Groups will be allowed to defend their material and answer questions.

Standard

NGSS HS-PS1-8: "Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay".

Integration of Global Education

- Students will work collaboratively to critically and creatively evaluate various historical and political issues in order to promote social change in the 21st century
- Students will recognize that collaboration in the classroom can extend to collaboration within the local, national, and global communities.
- Students will better understand other people's perspectives and identify what influenced them.
- Students will recognize and express their own perspectives and identify what influenced them.

Lesson Plan Modifications

- Students will investigate the effects of the nuclear bombings during World War II, Fukushima, etc. and the residual complications that are still present today.
- Students will be able to identify nuclear reactions and explain the energy associated with them.
- Students will be able to predict products of nuclear reactions and explain how these products are harmful to living beings.
- Students will be able to compare/contrast all the various types of chemical reactions (nuclear, Redox, Acid Base).

Informal Assessment

- Students will use the information gathered to explore how nuclear energy is being utilized today and analyze the benefits and costs of nuclear energy.
- Each student will write a letter explaining his/her personal view on nuclear energy and the students will be asked to critique each other's work.

Standard

NGSS HS-ETHS1-2: "Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering".

Integration of Global Education

- Students will investigate and study population demographics in some of the most populated cities in the world.
- Students will analyze the housing situation in these cities and some of the major issues associated with high-density areas.
- Students will research and evaluate ways to alleviate the housing situation in crowded cities.

Lesson Plan Modifications

- Students will investigate the issues of lack of living space in crowded cities.
- Students will design, build and test their structure and calculate its efficiency.
- Students will apply their knowledge about engineering and design to create models of housing in highly populated regions of the world.

Informal Assessment

- Students will follow the guidelines set forth and build a bridge that meets all specifications. They will test the strength of the bridge and calculate the efficiency afterwards. They will then build a second bridge for which the only criteria will be to have a higher efficiency.
- In a group setting, they will come up with ideas to mitigate the housing crisis found in crowded cities. They will present their ideas to the class in a short Prezi. If time allows, the students will work with the computer & graphic design class to develop computerized models of these living spaces.