Lesson Plan – Academic Biology Food Web Review and Photosynthesis Discoveries

Unit: Two – Matter and Energy

Section: One – Trophic Levels/ Two - Photosynthesis (Activities)

Date(s): October 5, 2017

Grade Level: 10

Time Allotted: 47 minutes

Objectives:

The students will be able to:

* Explain how most life on earth gets its energy from the sun.
* Explain the flow of energy within an ecosystem.
* Evaluate the efficiency of energy flow within a food web.

Standards: (NGSS Standards & Keystone Anchor Descriptors)

**BIO.A.2.2** = Describe and interpret relationships between structure and function at various levels of biochemical organization (i.e., atoms, molecules, and macromolecules).

**BIO.A.2.2.1** = Explain how carbon is uniquely suited to form biological macromolecules.

**BIO.A.2.2.2** = Describe how biological macromolecules form from monomers.

**BIO.A.2.2.3** = Compare the structure and function of carbohydrates, lipids, proteins, and nucleic acids in organisms.

Materials:

•Apple TV hook-up to project handouts while explaining

•Vocabulary Sheet – Section 1 (assigned)

•Guided Notes – Trophic Levels (Section 1)

•Food Web – warm up activity

•Photosynthesis Discoveries Activity

•Graph Paper

•Rulers

•White Board

•Markers

•Pens/Pencils

Pivotal Questions: (Engage/Extend/Evaluate)

* How are matter and energy related?
* What is a primary consumer?
* Indicate the transfer of energy between animals shown
* In a food web, do primary consumers or secondary consumers receive more of the energy supplied by producers?

Procedures: (Explore):

* Students will be given the Food Web activity as a warm-up. They will be asked to draw arrows to signify the relationships between each item on the paper.
* Students will also be asked to identify the different trophic levels of each organism within the web. (10 minutes)
* Students will do a food web class activity –
	+ Each student will be given a card with a specific organism written on the card
	+ Once the student has their organism, they must classify themselves with a specific level of the energy pyramid (as discussed from lecture)
	+ After each student has determined and written on their card the specific energy level, they then must organize themselves with others from that level.
	+ Student will then one-by-one be given string to start to make a “human food web”
		- Tertiary will consume secondary
		- Secondary will consume Primary
		- Primary will consume a producer
		- The producers receive their energy from the sun (Sun is 1 student in center of the room)
	+ By the end of the lesson the room should have each student interconnected with each other via a piece of yarn creating the food web.
* After reviewing food webs and the activity students will then be given the Activity – Photosynthesis Discoveries
	+ There are several scenarios for students to try to determine what certain organisms need to live and what they give off as waste products.  They will work with a group to analyze results and come up with conclusions to explain the phenomena.

Assessment(s) (Evaluate):

* Informal assessment –
	+ Students will also be spot checked on their completion of the food web
	+ Students will also be asked to explain their reason for choosing a specific trophic level when doing the food web activity.
	+ The teacher will circulate the room while students work on the photosynthesis activity to ensure progress and answer any questions.
* Formal Assessment -
	+ The food web worksheet activity will be collected and checked by the teacher.
	+ The photosynthesis activity will be collected and checked by the teacher.

Homework/Activities: (Extend)

* Students will be assigned the photosynthesis activity if it is not completed. It will be due the following day.

Accommodations/Adaptations/Modifications:

**Adaptation –** Structured notes are considered and adaptation for many 504s in the class. However, each student is given them because each benefit from them. This activity will be a group activity for students.

In regard to any assessments students are given a full period for the quiz. If extra time or other modifications are needed they will be provided to the student on an as needed basis in accordance with a 504 or IEP.

Self Evaluation: **See attached.**