INTENTIONAL UNIT PLANS

TEACHER: Kimberly Pangelinan

SUBJECT: Marine Biology/Biology

SCHOOL: Simon Sanchez High School

Title of Unit / Lesson Title: ENVIRONMENTAL SERVICE LEARNING PROJECT	Duration of Lesson (Days): 1st & 2nd Quarter	Date: September 7 thru December 11, 2015
Groups will be assigned 1 of the 6 topics: Climate Change Refugees, Sea Level Rise, Watersheds, Loss of Forests on Guam, Ocean Acidification, or Celebrating Different Cultures of Micronesia		

Student Learning Outcomes (SLOs)

ACADEMIC EXCELLENCE:	CAREER PREPARATION:	CIVIC ENGAGEMENT:
☒ through creative and critical thinking skills ☒ through effective communication skills ☒ through being goal oriented and self-discipline individuals	☒ taking initiative and demonstrating innovation ☒ demonstrating professional conduct, collaboration and other interpersonal skills ☒ efficient use of time and resources to achieve goals ☒ demonstrating the ability to understand and effectively use relevant technology	☒ awareness of local and global issues ☒ contributing time and talent to community needs

Design Question Focus of the Lesson (elements from other DQ's may be used as support)

☒ Introducing New Knowledge	☒ Deepening or Practicing	☐ Generating and Testing Hypotheses

Learning Goal/ Objective: (based on Standards) (teacher language)

BI.2.5 Explain dynamic equilibrium in organisms, populations, and ecosystems; explain the effect of equilibrium shifts.

BI.2.21 Realize and explain that, at times, environmental conditions are such that plants and marine organisms grow faster than decomposers can recycle them back to the environment; understand that layers of energy-rich organic material thus laid down have been gradually turned into great coal beds and oil pools by the pressure of the overlying earth; and understand that by burning these fossil fuels, people are passing most of the stored energy back into the environment as heat and releasing large amounts of carbon dioxide.

BI.2.26 Explain that the amount of life any environment can support is limited by the available energy, water, oxygen, and minerals, and by the ability of ecosystems to recycle the residue of dead organic materials; recognize, therefore, that human activities and technology can change the flow and reduce the fertility of the land.

BI.2.27 Understand and explain the significance of the introduction of species, such as the brown tree snake and other invasive species into Guam's ecosystem, and describe the consequent harm to native species and the environment in general.

BI.2.29 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.

BI.2.30 Recognize and describe how human beings are part of Earth's ecosystems and that human activities can, deliberately or inadvertently, alter the equilibrium in ecosystems.

BI.2.32 Recognize and describe how the physical or chemical environment may influence the rate, extent, and nature of the way organisms develop within ecosystems.

Learning Targets: (write in the scale below)		**(student language)**
2.0 Simpler Content: "I can identify my topic and state how it affects my island." "I can define the major terms within my topic and use it in a sentence." "I can memorize the script that is given to me so that I can present to various different classes." "I can organize my topic to present to other students."	3.0 Target (Objective/Learning Goal): "I can construct a fun and educational lesson plan." "I can investigate my topic." "I can assess the students I teach to gauge the information they learned." "I can differentiate between a middle/high school and an elementary school lesson."	4.0 More Complex: "I can create a music video that assists in educating people about my topic." "I can apply concepts related to my topic to the assigned projects." "I can connect my topic to my island, islands around me, the U.S., and the world." "I can design a lesson plan that fits my groups topic, and is fun for the students."

Level 1 (Recall)	Level 2 (Skill/Concept)	Level 3 (Strategic Thinking)	Level 4 (Extended Thinking)
Recite, tell, recall, state, repeat, use, name, match, 5 Ws, define, draw, identify, list, label, measure, illustrate, memorize, arrange, report, quote, calculate….	*Graph, classify, separate, cause/effect, estimate, compare, relate, infer, identify patterns, organize, construct, modify, predict, interpret, distinguish, make observations, summarize, show, categorize*	*Revise, assess, apprise, construct, critique, compare, investigate, differentiate, draw conclusions, hypothesize, formulate, cite evidence, critique, develop a logical argument…*	*Design, connect, synthesize, apply concepts, critique, analyze, create, prove*

Assessment and Monitoring: (checks for content and desired effect)

All assessments are for their group projects, but are graded individually:

Music Video
10 things related to topic (toys, picture, etc.)-Turn into sand projects
123, ABC, Interactive Books
Play-doh Molds
Educational Cards
Topic Presentations in front of my class

Critical Information Chunks (as determined by learning targets, or key vocabulary)

Climate Change; Sea Level Rise; Climate Change Refugees; Watersheds; Aquifer; Ocean Acidification; Deforestation; Different Cultures of Micronesia (Guam, Chuuk, Yap, Pohnpei, Kosrae, Palau, Kiribati, Saipan, Marshall Islands, etc.); Human Impacts on the Environment; Invasive Species (Native vs. Non-native vs. Invasive); erosion; sedimentation; ungulates; permeable; etc.

Learning Plan: Instructional Strategies /Lesson Activity: *(Identify your CFAs and CITW strategies in your plan)*

Anticipatory Set

*The world is full of surprises!! It's also full of science!! To actually enjoy our world, and respect it, you must first learn what it is all about! Mixing in a little bit of chemistry and physics, we will be learning all about our world, our country, and just as important-OUR ISLAND!
*Students will be assigned a group (preferably 4-5 students) and given topics on the board for their discussion.
*The topics include:

- -Climate Change Refugees
- -Sea Level Rise
- -Watersheds
- -Ocean Acidification
- -Loss of Forests on Guam
- -Celebrating Different Culture of Micronesia

*Students will be assigned a topic (teacher's discretion).

Instruction / Strategies

ALL GROUP PROJECTS WILL BE GRADED INDIVIDUALLY. ANY STUDENT THAT DOES NOT PULL THEIR WEIGHT FOR THESE PROJECTS WILL GET A ZERO.
* RESEARCH 20 FACTS (100 points)

-Students will research facts about their topic while focusing on our island and the impact the topic has on it. (Celebrating different cultures will always include Guam.)

STUDENTS THAT DON'T DO THIS PART OF THE PROJECT WILL BE TAKEN OUT OF THEIR GROUP AND WILL BE REQUIRED TO COMPLETE THE MUSIC VIDEO BY THEMSELVES IN ORDER TO GET BACK INTO THE GROUP.

*MUSIC VIDEO (150 points)

-Students will be given 1.5 weeks to create a music video with their group.

-Requirements include:

-MUST be between 2-3 minutes.

-MUST be danceable AND sing-able (NO RAP and NO SLOW SONGS).

-MUST have background music.

-MUST be appropriate to show ALL ages.

-EVERYONE must participate-either physically in the music video OR singing in the music video.

-Video MUST pertain to the topic (not just random things in the music video).

STUDENTS THAT ARE NOT IN THE MUSIC VIDEO WILL GET A ZERO AND WILL NOT BE ABLE TO PARTICIPATE IN THE EDUCATIONAL OUTREACH TO THE MIDDLE AND ELEMENTARY SCHOOLS.

*PLAYING CARDS (150 points)

-Requirements include:

-MUST have 54 different facts about their topic (1 fact per card, including the 2 jokers).

-MUST have 6 different pictures (duplicated 9 times).

-ALL students must complete their part of the project per a contract they sign and date that states what they will do to complete the assignment.

-Students will tape one fact and one picture on each card (in random order).

STUDENTS THAT DO NOT COMPLETE THEIR PART, PER THE CONTRACT, GETS A ZERO FOR THIS PROJECT.

*SAND PROJECT (150 points)

-Requirements include:

-MUST bring in 10 things that relate to the topic.

-It can be pictures, but it must be back-to-back and laminated (covered with clear tape).

-MUST bring in 2 plastic, clear jars per group.

-Each student will bring in 10 items that relate to the topic (i.e. mini toys, pictures, etc.) and place 5 of their items into one jar and 5 into the other jar.

-Students will fill up the jar with sand (3/4 of the jar only).

-Students will create a legend so other people know what's in it.

*CHILDREN'S BOOKS (200 points)

-Requirements include:

-MUST create 3 books per group.

-MUST have one ABC book, 123 book, Interactive book per group.

-ABC book

-ONLY 2 STUDENTS needed to create this book.

-Utilizing an important word within the topic, students will create a book full of pictures and facts.

-For example: **W** is for the 15 Watersheds found in Guam. **A** is for the Aquifer found in the north. **T** is for Too much water use in the aquifer can lead to salt water intrusion. **E** is for Everyone has a responsibility to maintain our fresh water supply. **R** is for Roughly 95 inches of rain per year in Guam. **S** is for Salt water intrusion will contaminate our fresh water in the north. **H** is for How can we help? **E** is for Eighty; percent of the island uses the aquifer for their fresh water. **D** is for Drinking fresh water is important, so let's make sure we take care of our water supply!

-123 book

-ONLY 1 STUDENT needed to create this book.

-Using buzz words, students will create a book with numbers 1-10 and draw that many of the

buzz word used for that number.
-For example: 1-Aquifer  2-Trees  3-Fish  4-Ungulates 

-Interactive book
-ONLY 2-3 STUDENTS needed to create this book.
-6-8 pages.
-Students will create a book that allows a child to interact with the book.
-For example: lift the door to see who's behind it.
-Another example: Built in finger puppet that allows the child to play with the book.

*PLAY-DOH PROJECT
-Students will bring in: 4 cups flour, 1 cup water, 1.5 cups salt, 2 tablespoons vegetable oil, food coloring, and mixing bowl. (Gloves are optional.)
-Students will mix all ingredients together and create play-doh.
-Styrofoam balls cut in half, students can cut out molds of things related to their topic.
-For example: tree, car, latte stone, etc.
STUDENTS ARE GRADED ON THEM BRINGING THEIR MATERIALS ON-TIME AND CREATING 2 MOLDS FOR THEIR TOPIC.

STUDENTS GO TO MIDDLE SCHOOLS AND ELEMENTARY SCHOOLS TO PRESENT THE TOPIC THEY RESEARCHED.
-They must follow the script given to them for the school-see attached scripts.

Guided Practice
*Samples of previous student's work.
*Weekly emails to the students to remind them of the requirements.
*Individualized attention for each student, just in case they need assistance.
*PRESENTATION IN FRONT OF THE CLASS (students are provided a script)
-Teacher should ask questions that students need to know about their topic: this questioning not only helps them to understand their topic more, but assists them in knowing what you want them to present.

Formative Assessment
* Presentations are given throughout the month within the high school. Teachers who are assigned the presentations are given an evaluation to fill out for each group.
*ELEMENTARY SCHOOL AND MIDDLE SCHOOL VISITS.
-7 Elementary schools (Wettengele, Tamuning, Upi, D.L. Perez, JMG, Finegayan, Price)
-2 Middle Schools (Benavente, Untalan)

Closure
*In-Class Reflection-students go in front of the class and talk about their experiences.
*Celebration with picture slideshow. Students get a chance to see themselves in action! ☺
*Print out pictures and post them on the wall.

Independent Practice
Every student is responsible for their part in all projects. Failure to complete their part may result in being removed from their group. They will also receive a zero for any project they do not complete.

Adaptations for Unique Student Needs: (ELL, Special Education, Gifted, Students who lack support for school)

ESL: teacher/peer assistance with assignments.
SPED: teacher/peer assistance with assignments. Individualized attention to ensure completion of assignments. Individual modifications when necessary.

Assignment(s):

***20 Researched Facts**
***Music Video**
***Sand Project**
***Educational Cards**
***3 Children's Books**
***Play-doh Project**

Resources and Materials:

Music Video:
Laptop/Computer, Microsoft Movie Maker (or something like it), Projector, DVD player, DVDs, Labels

Sand Project:
Mason jars (plastic/clear), sand, cardboard, toys, pictures (optional: laptop, printer)

Educational Cards
Playing cards, paper, colored markers/crayons optional: laptop, printer

Children's Books
Paper, colored markers/crayons, optional: laptop, printer, glitter, popsicle sticks, etc.

Play-doh Project
Flour, oil, water, food coloring, salt, Styrofoam, markers, a digging tool (mechanical pencil, paperclip, etc.)

Presentations:
Middle/High Schools:
Projector, DVD player, DVDs for music videos, pictures related to topic
Elementary Schools:
All the above, books, cards, sand projects, play-doh projects.

Recommendation: Bins for each topic (place all projects into each bin so it's easier to distinguish when it's time to go to the schools).